FOR RICHER FIELDS

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INDUSTRY WEEK

Brea Completes Phosphate Plant

LOS ANGELES — A 210,000-gal. aqua ammonium phosphate plant, the second of several liquid phosphate facilities to be constructed in California by Brea Chemicals, Inc., subsidiary of the Union Oil Company of California, was completed recently in Fresno, it was announced by Homer Reed, Brea president.

Phosphate is now being made available in conjunction with Aqua Ammonia by the firm. This makes Brea Chemicals the only major producer of phosphate and nitrogen in solution form.

"The Fresno facility was constructed to meet the increased demand for phosphate in central and northern California," Mr. Reed said. "It supplements our supply of phosphate which is being distributed in California from our first production unit at Brea."

The first aqua ammonium phosphate facility was completed last September on the site of the $13,000,000 ammonia plant at Brea, near Los Angeles.

According to Mr. Reed, the new solution contains 8% nitrogen and 24% phosphate. The phosphate is completely water-soluble.

The Fresno facility was constructed by Ehrhart and Arthur, Inc., Los Angeles engineering and construction firm. It is located near the 2,310,000-gal. Brea Aqua Ammonia distribution terminal.

Curry to Build Liquid Fertilizer Plant

BARTLESVILLE, OKLA.—Phillips Petroleum Co.'s wholly owned subsidiary, Curry Chemical Co., has announced plans for immediate construction of a 40-ton per day liquid mixed fertilizer plant near its dry fertilizer mixing faciilties at Scottsbluff, Neb.

The new plant, which will be equipped to produce liquid fertilizers containing nitrogen and phosphate along with potash when desired, will be primarily a developmental facility to provide fundamental information on the subject and to acquaint interested fertilizer distributors with the techniques and economics of liquid mixed fertilizer manufacture and marketing, the firm stated. The plant is expected to be in operation by late spring 1955.

Firm to Start Sodium Sulphate Output

LOS ANGELES—West End Chemical Co. will start producing salt cake and anhydrous sodium sulphate by approximately mid-summer, 1955. It will be extracted from the natural brine deposits at Searles Lake, Cal., and processed by special equipment now under construction.

The evaporator, designed and patented by H. D. Hellmers, vice president and J. V. Wiseman, research director, is the first of the major equipment now completed and in place. Initial production will be at the rate of 50,000 tons annually.

Materials That Inhibit Development Of Insects Being Studied by USDA

WASHINGTON—A group of chemicals that inhibit the normal development of insects, instead of causing immediate death to the pests, are being studied by USDA entomologists. Under investigation are materials such as colchicine and aminopterin which prevent cell division and growth; and sulfanilamide and coumarin which retard an insect's metabolism.

Preliminary investigations by insect physiologists and chemists at USDA's Agricultural Research Center, Beltsville, Md., indicate that there are many of these growth-inhibiting chemicals, of which piperonyl butoxide appears to be one of the most promising.

This chemical, normally used as a synergist with other insecticides, has been found to slow down the rate of house fly larvae development. Blended with a bran-yeast medium, in which fly larvae are reared in the laboratory, piperonyl butoxide caused the larvae-to-adult development period to be lengthened by two days. When the amount of piperonyl butoxide was slightly more than doubled (to an amount equal to 0.25% of the total weight of the rearing medium), practically no flies reached adulthood.

The scientists also report that use of piperonyl butoxide in this manner was more effective against the larvae of DDT-resistant flies than against those of normal flies. In one of their experiments, only 3% of the resistant flies became adults; 16% of the normal flies survived, according to the USDA report.

New Illinois Firm

CHAMPAIGN, ILL. — Sure Grow Seed & Chemical Co., a new firm here, held open house recently. The company handles seed, fertilizer and chemicals for the farm. Joe Manion is manager.

INSECT, PLANT DISEASE NOTES

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Regulated Area Of White-Fringed Beetle Extended

WASHINGTON — In an order of the U.S. Department of Agriculture effective April 14, 1955, white-fringed beetle regulated areas have been extended to include for the first time parts of Marengo County, Alabama, and Hardeman County, Tennessee.

Additional areas have also been added to those already under regulation in Baldwin, Conecuh, Mobile and Wilcox counties, Alabama; Jackson County, Florida; Baldwin and Dodge counties, Georgia; Tangipahoa and Washington parishes, Louisiana; Clarke, Jasper and Leake counties, Mississippi; and Shelby County, Tennessee.

In a regulated area, the U.S. Department of Agriculture and cooperating states supervise the movement of plants and other articles that might spread the white-fringed beetle to uninfested areas. The entire states of Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee are quarantined because of the white-fringed beetle, but only those portions actually infested are designated as regulated areas.

The beetle, which does not fly, does the most damage as a grub in the soil, attacking the roots of cotton, tobacco, peanuts, corn, sugarcane, sweetpotatoes, clover, and other field crops.

Regulated areas in the eight quarantined states, including those added in the April 14 order, now include all or portions of the following counties and parishes:

Alabama: Baldwin, Clarke, Coffee, Conecuh, Covington, Crenshaw, Dal-

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Gypsy Moth Spray Program Ready In Massachusetts

BOSTON—Aerial spraying of about 800,000 acres in Massachusetts for gypsy moth control is expected to get underway about April 25.

Bids for application were opened recently at the State Department of Natural Resources office by Arthur Lyman, commissioner of natural resources.

The low figure was .3488¢ gal. on a combined bid from Biegert Bros., Inc., Lincoln, Neb., and Chris Stoltzfus, Coatesville, Pa. Other bidders included Central Aircraft, Inc., Yakima, Wash., .374¢ gal., and East Coast Aviation Corp., Lexington, Mass., .379¢ gal.

As much as 550,000 gal. DDT and oil spray may be used in the project. In addition to application, the successful bidder is to furnish transportation of the material, which is supplied by the state, from the state mixing plant at Storo, Mass.

Also scheduled are two federal gypsy moth spray projects in New York.

Burley Growers To Vote on Lower Quotas

USDA Establishes New Allotment at 320,000 Acres

WASHINGTON — Burley tobacco growers will vote April 28 in a referendum on a redetermined national marketing quota of 334 million pounds for the 1955 burley crop.

Under this quota, which has been proclaimed by the U.S. Department of Agriculture, as directed by Congress, burley growers would be cut back to 320,000 acres, compared to the original allotment for 1955 of 369,000 acres and the 1954 allotment of 399,500 acres.

If the redetermined quota were converted to acres on the basis of the 1949-53 adjusted national average yield it would represent a reduction of 37% from the 1955 preliminary burley allotments. Because such a reduction in one year would have worked undue hardships on tobacco farmers, legislative limitations restrict the amount of reduction that can be made for 1955.

The limitations provide specifically that no 1955 preliminary burley farm acreage allotment may be reduced more than 25%; that previously established 1955 burley farm acreage allotments of seven-tenths acre or less may be reduced for 1955 by not more than one-tenth acre; and that previously established 1955 burley farm acreage allotments of five-tenths of an acre or less will not be further reduced for 1955.

The new law also provides that, effective for 1956 and subsequent crops of burley tobacco, the farm acreage allotment for burley tobacco for any year **shall** not be less than the smallest of (1) the allotment established for the farm for the immediately preceding year, (2) five-tenths of an acre, or (3) 10% of the cropland, but in no case shall an allotment of seven-tenths of an acre or less be reduced more than one-tenth of an acre in any one year.

The additional acreage required to meet this minimum would be in addition to the state acreage allotments and the production of such acreage would be in addition to the national marketing quota.

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Arnon L. Mehring

Arnon L. Mehring To Head Fertilizer Work at USDA

WASHINGTON — Arnon L. Mehring, authority on fertilizer materials and manufacturing, was appointed recently to head the fertilizer work of the Commodity Stabilization Service of the U.S. Department of Agriculture. His work is in the Food and Materials Requirements Division of CSS. Here he will direct a continuing study of supply and demand conditions for fertilizers. In addition, he will edit the Government publication, "The Fertilizer Situation," a statistical periodical.

Mr. Mehring has been in the government service some 42 years, having entered in 1913. Nine years later, he moved to the Fertilizer Division of the old Bureau of Soils. He worked at the Arlington Experiment Station to improve processes for the manufacture of fertilizers, such as concentrated superphosphate and potassium nitrate. He took an active part in the campaign to eliminate unneccessary filler from mixed fertilizers. He also worked on drillability, segregation, granulation, and methods of applying fertilizers, and on fertilizer distributors.

In 1934, H. R. Smalley and Mr. Mehring made a survey of the consumption of nitrogen, phosphoric acid, and potash in U.S. agriculture. Mr. Mehring repeated these surveys at intervals, and they are now carried on annually.

During World War II Mr. Mehring served as consultant on fertilizers in the Office of Agricultural War Relations. After the war he kept a close check on fertilizer requirements and consumption trends for the Bureau of Plant Industry at Beltsville, Md.

A nationally recognized authority, Mr. Mehring has published more than a hundred scientific and technical articles and bulletins on fertilizers. He served the American Chemical Society as abstractor for the Soil and Fertilizer Section of Chemical Abstracts for many years, and more recently as chairman of the Division of Fertilizer and Soil Chemistry. He also took an active part in the work of the American Institute of Chemists, the American Society of Agronomy, and various national committees having to do with fertilizers and chemical statistics.

COSTLY WEEDS

DES MOINES — Weeds cost Iowa farmers between $60 and $100 million a year, E. P. Sylwester, Iowa State College, told the Iowa Association of County Weed Commissioners here recently.

Higher Earnings For First Quarter Reported by CSC

BALTIMORE — J. Albert Woods, president of Commercial Solvents Corp., informed stockholders at the annual meeting here April 7 that the company's estimated sales and earnings for the first quarter this year are better than the corresponding period last year, with a favorable outlook for continued improvement.

Mr. Woods reported that satisfactory progress has been made on construction of CSC's nitroparaffins plant at Sterlington, La. Completion is expected in the third quarter of this year. Full benefit will materialize in 1956 from this $5,000,000 project, it was reported.

Commercial Solvents' participation in Northwest Nitro-Chemicals Ltd., a Canadian company located in southern Alberta which will produce high analysis chemical fertilizers, was confirmed by Mr. Woods. (See Croplife, page 1, March 7.) CSC will operate the new company under a long term management contract.

Initial operation is scheduled for early 1957. Consumption of Northwest Nitro-Chemicals' output will be in the agricultural areas of the Canadian prairie provinces and the northwestern U.S.

Commenting on CSC business in 1954, Mr. Woods said that a significant increase in unit sales was required to attain a dollar volume comparable to 1953. Price reductions from intensified competitive conditions in biochemicals cut sharply into overall sales and profits, but full benefit was reflected from the company's expanded position in petrochemicals. Substantial progress was made in lessening dependence on unsatisfactory operations and in transferring emphasis toward the more profitable areas of Commercial Solvents business.

Net sales for 1954 were $51,608,349 and net earnings were $2,668,342, or $1.01 per share of common stock. Net sales for the preceding year were $51,310,204, with earnings per share the same for both years.

At the meeting shareholders voted to change the company's common stock, which is without par value, to common stock having a par value of $1 per share.

Pennsalt Appointment

PHILADELPHIA—Hugh C. Land will succeed William P. Drake as head of the Pennsylvania Salt Manufacturing Co.'s Industrial Chemicals Division, the latter has announced. Mr. Drake recently was named executive vice president when president George B. Beitzel announced plans to retire later this year upon completion of 25 years' service with the company.

SAFETY AWARD PRESENTED—A. J. Brewer, center, superintendent of the Gretna, La., plant of Davison Chemical Co., Division of W. R. Grace & Co., accepts the Geiger Safety Award from Curtis Cox, second from left, chairman of the Southern Safety Conference Fertilizer Section. The Gretna plant had worked six years (Feb. 5, 1949 to Feb. 5, 1955) without a lost time accident in 327,504 manhours. The presentation was made Feb. 28 in connection with the New Orleans meeting of the Fertilizer Section of the Southern Safety Conference. In the picture, left to right, are: A. B. Pettit, administrator, Industrial Health & Safety, Davison Chemical Co., Division of W. R. Grace & Co., Baltimore, Md.; Mr. Cox; Mr. Brewer; J. W. Ground, III, district manager, Davison Chemical Co., Division of W. R. Grace & Co., Joplin, Mo., and E. M. Harold, manager of the Gretna plant.

Replanting of Spring Crops Underway in Texas

SAN ANGELO, TEXAS—Replanting of spring crops is in full swing in the southern part of Texas. The recent wintry blasts which penetrated almost to the tip of the state virtually wiped out all the peach, pear and plum crops, killed some citrus fruit and caused thousands of acres of early cotton to be replanted.

In the central and northern part of the state corn is being replanted and some spring planted small grains were damaged. Vegetables were hard hit, as were pecans and minor crops.

West Texas has its usual dust storms, but they have been more severe than during any year since 1952. Wheat fields were given temporary relief by spotted showers, but general rains are badly needed.

The West Texas irrigated area is in better shape than it has been since 1950. There is still some moisture left, and most irrigation farmers did extensive winter irrigation. Cotton planting will start about April 20 in most sections.

$2 MILLION CROP

BATON ROUGE—Pecans are valued at around $2,000,000 annually in Louisiana.

W. E. Zimmerman Named Velsicol Sales Representative in Florida

CHICAGO—W. E. Zimmerman has been appointed Velsicol sales representative in Florida according to an announcement by John F. Kirk, vice president and sales director of the firm.

Mr. Zimmerman's background includes extensive work in sales development in the chemical and insecticide field. His work included several years in research and development and technical sales for American Cyanamid Co. and the O. E. Linck Co.

He was graduated from Bethany College, West Virginia, and has done post graduate work in agronomy and entomology at Pennsylvania State College and Rutgers University. Mr. Zimmerman will make his headquarters in Orlando, Fla.

Olin Mathieson Establishing Insecticide Warehouses in Midwest

BALTIMORE—Olin Mathieson Chemical Corp. is establishing a network of insecticide warehouses throughout the Midwest, S. Y. Roth, sales manager of the company's North Central District, has announced.

The warehouses will be located at Mason City, Burlington and Des Moines, Iowa, Kansas City, Kansas, Sioux Falls, S.D. Omaha, Neb., and St. Louis, Mo.

Olin Mathieson will stock not only insect killers but also chemicals to inhibit weeds, fungus organisms, nematodes and viruses, the firm said.

Olin Mathieson, a major supplier of fertilizers and pesticides and manufacturer of basic pesticide materials which are sold in bulk to other formulators, has not previously sold finished pesticides under its own Mathieson label in the Midwest.

"Adding insecticides to the line carried by our fertilizer dealers is in keeping with our policy to make available through them a complete selection of agricultural chemicals," Mr. Roth said.

Chemical Industry Plants Establish New All-Time Safety Record in 1954

WASHINGTON, D.C. — The chemical industry set a new all-time safety record in 1954, it was announced here April 12 by the Manufacturing Chemists' Assn.

Lost-time accidents in the industry, as recorded by the MCA General Safety Committee, amounted to 3.27 per million man-hours worked, the lowest figure in the history of the industry and an 11% improvement over 1953. Accident severity rate declined to 0.49 per thousand man-hours worked, a reduction of 40% over 1953.

On the basis of these figures, S. M. MacCutcheon of the Dow Chemical Co., chairman of the General Safety Committee, observed, "The average chemical plant worker is safer on the job than off."

Chemical industry accident rate, Mr. MacCutcheon pointed out, is less than one-third of the 11.50 (per million man-hours worked) preliminary figure reported for all manufacturing for 1954 by the Bureau of Labor Statistics. The chemical industry has reduced its accident frequency rate 57% since 1946.

The MCA safety performance report covers plants in North America representing over 757 million employee hours of exposure.

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INSECT, PLANT DISEASE NOTES

Yellow Clover Aphid Found in Southwest

OKLAHOMA CITY, OKLA.—The yellow clover aphid has been found in Oklahoma, according to Newton Flora, Oklahoma A&M entomologist. The pest is reported to have destroyed 90% of the New Mexico alfalfa crop last year and did heavy damage to similar crops in both Arizona and California in 1954.

ARTESIA, N.M.—Presence of the yellow clover aphid in New Mexico stands as a threat to the alfalfa crop for 1955. Last year's heavy damage, reported to have run into millions of dollars could be repeated this year, according to Dr. Robert Fye of the New Mexico A&M College.

The yellow clover aphid entered the U.S. from India 60 years ago and was numerous in the midwest at the turn of the century. Up to last year, the insect had not been a serious pest.

Farmers in Lea county are reported to have plowed up and replanted alfalfa fields to cotton and grain sorghums, while in the El Paso Valley, new plantings are being postponed until growers make up their minds about the aphid threat.

Small Populations Counted in Illinois

URBANA, ILL.—Fewer clover leaf weevils are being found in fields this spring, H. Petty, extension entomologist with the Illinois Natural History Survey reports. He says that field counts show weevil populations varying from a few to 30 per square foot in fields examined thus far.

This number is less than populations at this time in both 1953 and 1954, when many farmers suffered severe damage in their new seedings from the small green worm with the white to yellow stripe down its back. Field counts may still go up when warm weather comes if all eggs have not hatched by that time.

Most fields so far show only minor damage, Mr. Petty says, although an occasional clover field is showing heavy weevil damage.

G. H. Boewe, assistant plant pathologist at the University of Illinois, has reported that Stewart's disease, or bacterial wilt, of corn, probably will be less destructive and will not occur as far north in Illinois as it did in 1953 and 1954.

Since the chief means of overwintering of Stewart's disease are in the bodies of adult corn flea beetles, control of this insect as a preventive measure against the disease is important.

Mr. Boewe's forecast on Stewart's disease, the seventh to be made for Illinois, is based upon the close relationship that appears to exist between the amount of disease developing during the summer and the temperature of the preceding winter. In general, the development of both phases of the disease, especially on sweet corn during this period, coincided very closely with the predictions made in the first six forecasts.

Recent surveys made in Champaign County show that many corn flea beetles survived the past winter and the extremely low temperatures of late March, 1955.

Armyworms Reported In South Carolina

CLEMSON, S.C.—Armyworm damage to oats, incidence of crown gall on peach trees, and local outbreaks of tobacco blue mold are reported by specialists in Clemson Entomology and Plant Disease Extension Work.

An armyworm as yet unidentified has been reported in Beaufort County. Past experience indicates that this insect is to be found on those fields of grain growing on the best soil and with the most luxuriant growth. Toxaphene at the rate of three pounds actual per acre as a spray or dust will give effective control.

Crown gall of peach has been reported from various parts of South Carolina, in an "alarming incidence."

Evidence tends to indicate that at least a substantial portion of this has come in on nursery stock. In one instance a prominent peach grower rejected 5,600 peach trees because he noticed the swelling on the roots caused by this bacterial disease.

Tobacco blue mold was found in two locations in an area about four miles south of Lakeview recently. Each outbreak consisted of a single spot about one square yard in area. There was no indication of plants being infected outside of the localized outbreaks.—D. W. Watkins and S. C. Stribling.

Infestations in Kansas Reported Very Light

MANHATTAN, KANSAS — Noneconomic infestations of greenbugs were found in the following counties of central and south central Kansas: McPherson, Reno, Pratt, Barber, Kingman, Harper, Sumner and Sedgwick.

English grain aphids were found on wheat in nearly all fields that were examined in McPherson, Reno, Pratt, Barber, Kingman, Harper, Sumner and Sedgwick counties.

Pea aphids have begun to appear in alfalfa fields in central and southern Kansas. These aphids were found as far north as Ottawa County; other counties in which infestations were found included Saline, McPherson, Reno, Kingman, Harper and Sumner. Counts are very light.

A small aphid, probably the yellow clover aphid, was found on alfalfa in southern Sumner County. The infestation was very light; a few aphids were found and collected for purpose of identification. This aphid was also reported taken on alfalfa in Meade County.

Army cutworms were found in wheat, barley, and alfalfa fields of central and south central Kansas. Infestations of economic importance were found in seedling alfalfa in Reno, Sedgwick, Sumner, Harper and Kingman counties.

Examination of girdled corn stalks in a field in Geary County, central Kansas, showed 100% winter mortality of Southwestern corn borer larvae. One field in Cloud County had 100% larval mortality while another showed a 10% survival of larvae.

Light to severe infestations of brown wheat mites occur throughout south central Kansas. The counties in which the heavier infestations occur are Reno, Kingman, Pratt, Barber, Harper, Sumner and Sedgwick.

Canadians Look at Rust Development

WINNIPEG, MAN., CANADA — Since rust development in the U.S. is an important factor in determining whether or not a rust epidemic is likely to develop in the Prairie Provinces of Canada, observers in Canada are watching closely the development of the disease in the southern part of the U.S.

The report points out that while it would be "highly desirable" to predict whether or not serious rust infection will develop this summer in Manitoba and Saskatchewan, this cannot be done accurately because weather conditions from May to July will be the determining factors.

Leaf rust of wheat was present throughout Texas and in parts of Oklahoma at the middle of November, 1954, and stem rust was found in the Texas panhandle, along the Texas-Oklahoma border at that time, the report says. Later, in early December, stem rust was found at several points in central and southern Texas. Thereafter, the winter was mild and very little winterkilling of wheat took place. Consequently, conditions were favorable for the over-

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Missouri Insect Surveys Alert Farmer and Industry

By LAWRENCE A. LONG
Editor of Croplife

Information on insect developments in a state or within a group of states is of utmost importance to the pesticide trade, both on the formulating and distributing levels. Knowledge that an infestation is due to hit an area soon alerts everyone concerned and enables the pesticide distributors and dealers to have at hand ample supplies of the right kind of insecticidal materials at the right time, for effective control.

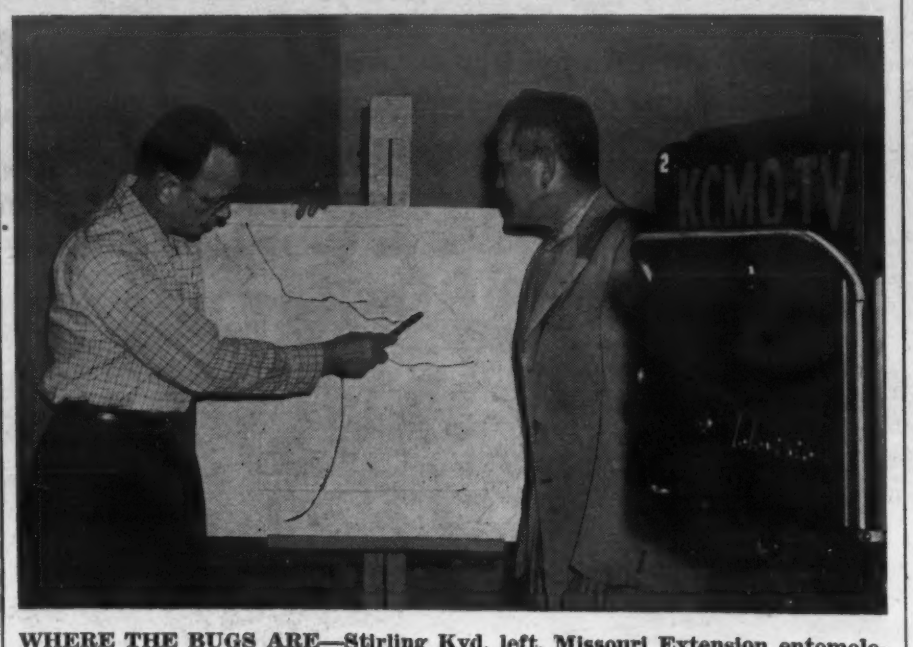
From whom does this information come? How do the entomologists go about gathering data from which predictions of infestations are made? What route does the news follow in reaching the people most interested in developments of this character?

Practically every state has an entomological staff, usually in connection with the Agricultural Experiment Station or the State College or University. U.S. Department of Agriculture entomologists work with the state men in many cases and together cover broad areas of a state to check on developments of agricultural pests.

A good example of how the pesticide trade and growers in one state are kept up to date on insect conditions within their area is seen in the operations of Stirling Kyd, extension entomologist, University of Missouri, Columbia. Mr. Kyd, with the assistance of George W. Thomas, USDA survey entomologist, covers much of the entire state each week making checks in various fields and orchards and reporting his findings promptly the end of the trip.

This cooperative project is sponsored jointly by the Missouri Agricultural Extension Service, the Agricultural Experiment Station, the State Department of Agriculture and the Plant Pest Control Branch of the U.S. Department of Agriculture. During the active season, insect situation reports are sent to county agents, vocational agriculture teachers, insecticide formulators and retailers, radio stations and to various publications.

The people of Missouri have every opportunity to learn what to expect of the insect pests. This, according to Mr. Kyd, is one of the chief responsibilities of his office.



WHERE THE BUGS ARE—Stirling Kyd, left, Missouri Extension entomologist, appears on TV program with Jack Jackson, agricultural director of KCMO-TV, Kansas City. Map of state enables entomologists to point out areas where infestations may develop in next few days or weeks, thus alerting the insecticide trade and growers to have adequate control materials on hand when the insects actually appear.

"We must keep farmers up-to-date on the situation and give them recommendations for control measures," he comments. "We must keep them informed of developments in time for them to use adequate measures. It does no good to spray after the damage has been done."

How Mr. Kyd goes about disseminating the information on insects is an interesting story. The medium of television lends itself to this type of presentation, and Mr. Kyd appears on a number of programs to point out areas where infestations could take place in the near future. Radio transcriptions on the insect situation are also made each week for Stations KCMO, Kansas City; KFEQ, St. Joseph; KWTO, Springfield and KLIK, Jefferson City.

In addition, county agents, through their regular news columns in local newspapers, radio programs and news letters make this information further available to all farmers and pesticide dealers throughout the state.

Mr. Kyd reports that this effort pays big dividends. "By being warned that a certain insect was building up in large numbers, farmers who act on this information are able to check their fields and spray when needed, before damage becomes severe," he says.

"The insecticide industry, on advice that trouble is developing in

(Continued on page 21)

Davison Names F. Clayton Nicholson New Vice President

BALTIMORE—Appointment of F. Clayton Nicholson as vice president of the Davison Chemical Co. Division of W. R. Grace & Co., in charge of chemical operations, was announced by Marlin G. Geiger, president of Davison, April 11. Mr. Nicholson's responsibilities include operations at Davison's Curtis Bay Works, Baltimore; Cincinnati Division; Florida Phosphate Division (Bartow), and Lake Charles (La.) Division.

Mr. Nicholson succeeds William B. McCloskey who has been named vice president of the parent company, W. R. Grace & Co., in charge of administrative controls.

Mr. Nicholson formerly bore the title of director of chemical operations, to which he was appointed in July, 1952.

He is a chemical engineering graduate of Purdue University, and after experience with Anderson-Pritchard Oil Corp., and Gulf Research & Development Corp., in technical positions, he joined Davison in 1942 as quality control supervisor. He was successively assistant superintendent of quality control; assistant works manager, Curtis Bay, and manager of the Cincinnati Division, before becoming director of chemical operations.

Mr. Nicholson headed the process and quality control group of Davison's first synthetic fluid-type cracking catalyst plant, at Curtis Bay, and has been continuously associated with the production of this catalyst since its commercial inception.

He is a member of the American Institute of Chemical Engineers, American Chemical Society and Baltimore Association of Commerce.

North Carolina Half-Year Fertilizer Sales Show Gain

RALEIGH, N.C.—Fertilizer sales in North Carolina during the last half of 1954 totaled 273,500 tons, an increase over 256,611 tons during a corresponding period a year earlier, according to the North Carolina Department of Agriculture.

Included in the figure for the last half of 1954 were 234,154 tons of mixed goods and 39,346 tons of materials. Leading grade was 2-12-12, with 86,826 tons.

Along with the report, the department issued a reminder that the State Board of Agriculture, on March 1, amended the regulations concerning the size of bags in which commercial fertilizers may be sold in the state. The new section reads:

"Bags of only the following sizes shall be used in the sale of commercial fertilizer: 200 lb., 167 lb., 125 lb., 100 lb. and 50 lb."

140 Attend Kansas Fertilizer Meeting

MARYSVILLE, KANSAS — More than 140 farmers attended the recent fertilizer meeting here sponsored by Brauchi Bros. Two soils men discussed land building practices and, in particular, the use of liquid nitrogen solution fertilizers.

Speakers on the program were Steve Grosserode, sales representative of Farm Fertilizers, Inc., of Omaha, and Leonard M. Brannan, vice president of the company. They were introduced by Oscar Brauchi. The two soils men showed a series of colored slides depicting the effect of mixed water soluble and nitrogen solution fertilizers on crop growth.

USDA Issues Bulletin On Sweetpotato Diseases

WASHINGTON — The third revision of a Farmers' Bulletin on diseases of sweetpotatoes, first published more than 35 years ago, has just been issued by the U.S. Department of Agriculture. Superseding a bulletin issued in 1944, it contains accounts of new practices and new materials used in control of both field and storage diseases of sweetpotatoes, and descriptions of disease-causing organisms.

There are descriptions of more than a dozen diseases, including details on control, distribution, and losses and discussion of sweetpotato varieties resistant to some of these diseases.

The bulletin contains facts on two sweetpotato ailments not discussed in previous editions. One of these is "internal cork," a virus disease causing dark brown to black corky spots in the flesh, first described technically in the Southeast about 10 years ago and now found in some areas where sweetpotatoes are grown.

The other new section in the bulletin is devoted to root knot, a nematode-caused disease producing small galls on the fine feeder roots.

A single copy of the new edition of Sweetpotato Diseases (Farmers' Bulletin No. 1059) may be obtained free from the Office of Information, U.S. Department of Agriculture, Washington 25, D.C.

Inspectors Assigned to Khapra Beetle Project

STATE COLLEGE, N.M. — The Plant Quarantine Service of New Mexico A&M College has announced the appointment of Robert M. Eads and Donald D. Lucht as inspectors to work on the Khapra beetle project in the state. Mr. Eads will be stationed in Clovis to carry on inspection and certification work in Curry and Roosevelt counties. Mr. Lucht will be stationed at State College to carry on inspection and certification work.

West Texas Aims at Another Big Cotton Year

LUBBOCK, TEXAS—A 20-county area on the West Texas Plains produced 1,539,734 bales of cotton in 1954. The state of Texas produced almost four million bales.

In 1955 farmers of the South Plains will again try to set a record, although cotton allotments have reduced the acreage about 2%. One thing in favor of a larger crop this year is that the dryland farmers have more moisture than at the same time last spring. Also the sale of fertilizer has been heavier, and several new irrigation areas were established.

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ANTIBIOTICS IN AGRICULTURE

Plant Physiologist Asks: Is the Impact of Antibiotics On Medicine About to Be Re-Enacted on a New Stage?

EDITOR'S NOTE—Author of this article is Dr. Louis G. Nickell, plant physiologist, Chas. Pfizer & Co., Inc., Brooklyn, N.Y. The paper was prepared for presentation before the 20th annual National Farm Chemurgic Conference, March 23, 1955, at Columbus, Ohio.

v v

No crystal ball is needed to see that antibiotics are definitely in the future of agriculture. In view of developments, it is easy to believe that the impact of antibiotics on medicine in the last 15 years is about to be re-enacted on a new stage: agriculture.

First, what is an "antibiotic"? It is an organic chemical compound produced by a microorganism which has the capacity in dilute solution to inhibit the growth of, or to destroy, other organisms. Perhaps, in our quest, even this definition will have to be reevaluated or extended. The existence of antibiotics has been known for many years, but their general usage in medicine was not possible until types non-toxic to the human body were found.

We hope to point out here some present and potential non-medical uses of antibiotics which might raise the question: "Are we on the threshold of 'the antibiotic era of agriculture'?" As for the future, what we must have in mind is the concept of "agricultural antibiotics" entirely separate from medicine. We must utilize the information to be derived from research in the pharmaceutical field but must not be limited by it nor employ the same set of criteria for success.

The potential of antibiotics in agriculture is exciting. The rate at which the agricultural products divisions of most pharmaceutical companies are expanding indicates a belief on their part that the future is bright.

One major use of antibiotics in the agricultural field which first comes to mind is control of diseases, in both animals and plants. This is logical, since the development of these "miracle drugs" was based on this life-saving property. Use of antibiotics in animals is rather straightforward, being based on the information gained from human therapy. Since this use is commonly practiced, it will not be discussed further here.

The use of antibiotics in the control of plant disease is in its infancy, and not because plant scientists have failed to test them to determine their effectiveness. Actually, most antibiotics have been tested by workers in the plant field as soon as they became available.

Why, then, is their use in the field said to be "in its infancy"? This is probably due to a number of causes, some reasonable, others not so reasonable.

To begin with, when a compound of the antibiotic type is first discovered, it is available only in small quantities. Since its future depends on its acceptability as a medicine, all available material is used to determine animal and human protection and toxicity. Even if it clears these hurdles, and is deemed important enough to be made in sizable quantities, the cost is often prohibitive when considered for use in the plant field.

Second, most early preparations of the antibiotics were contaminated to a greater or lesser degree with compounds of the plant hormone type, some of which are added to fermentation media as precursors for the active molecule (such as phenylacetic acid in the penicillin G fermentation). Others, such as indole acetic acid, are metabolic products of many fungal and actinomycete fermentations. The presence of traces of this type of compound is of no importance in animals or humans, but on the contrary, are extremely potent when applied to plants.

As a result, early work in the use of antibiotics on plants gave inhibitory results which were misleading and resulted in less interest in their future as is now being shown.

Third, in vitro tests are not a reliable measure of activity against the fungi, and much of the early work was directed at the fungi.

Plant Disease Control

Within the past few years there has been a tremendous increase of interest in the use of antibiotics for the control of diseases in plants, particularly bacterial diseases. Several of the more common antibiotics have been found effective in various diseases, especially in the control of fire blight of apples and pears, wildfire of tobacco, blast of stone fruit, walnut blight, and bacterial spot of tomatoes and peppers; diseases whose control previously had been most unsatisfactory.

The problem of fungal diseases is quite different than that of virus diseases. In the first place, fungal diseases are more important in plants than are bacterial diseases. The reverse is true in the case of animals. Secondly, antifungal antibiotics are relatively rare and are usually quite toxic.

Before going into details of antibiotic activity, the economics of the problem should be considered in a general way. Why, one may ask, should we even consider antibiotics as antifungal agents when their cost is so high compared with the synthetic organics? Why even embark on a search for compounds, which even if found, will cost dollars per pound, when we have compounds available which cost only pennies per pound?

The points in favor of searching for antifungal antibiotics, I believe, are strong enough to warrant a continuation of this search:

Will Offset Cost

1. The high level of activity of antibiotics will offset to a large degree their high cost. For example, the fungicides now employed for disease control are mostly effective at levels of the order of 1,000 to 10,000 p.p.m. In an antifungal antibiotic, one would hope to find activity at levels considerably lower than these.

It must be kept in mind that the increased cost of a new type of compound is not the most important consideration, but the profit to be derived from the utilization of this more expensive compound. This point was stressed by Dr. George L. McNew, managing director of the Boyce Thompson Institute for Plant Research, in a recent symposium on pesticides when he was discussing the change from inorganics to organics.

"These new wonder chemicals were expensive per pound but ever so cheap on the pocketbook," he said. "The cost of treating an acre of pea seed increased from 33¢ to 67¢ when chloranil replaced cuprous oxide, but it gave 400 lb. more shelled peas worth $10. The cost of treating spinach seed went up to 22¢ but the treatment gave up to $300 more spinach per acre."

"The farmer soon learned that expensive chemicals were cheap when half a pound of dichloronaphthoquinone would replace 8 lb. of sulfur, 1 lb. of DDT gave better control of codling moth than 6 lb. of arsenical. Every time a pound of organics replaced a pound of inorganic compound, it did from twice to twenty or more times as much economic good."

2. Most fungicides currently employed are general poisons. An increasingly dimmer view is being taken by control bodies of toxic residues, such as the arsenicals and mercurials. One should expect to find an antibiotic with differential toxicity, low for the plant host, high for the pathogen.

3. One would expect to find compounds with systemic action within the plant as well as activity on the surface to which applied. With very few exceptions, the fungicides used today are surface protective agents.

4. A specificity of action might be found which is not obtainab'e from current compounds.

5. There is the strong possibility of controlling diseases which are completely untouched by the available materials.

The last two reasons are particularly applicable in the case of obligate pathogens such as viruses, smuts and rusts. Being obligate parasites, these diseases are intimately connected to the essential metabolism of the host. When a chemical is found which is effective against one of these diseases, it will, in all probability be highly specific. Also it must be subtle in its action, being able to disconnect the parasite from the host metabolism without killing the host. Preliminary results indicate that such a specificity does occur.

The results of work in the field of plant viruses and their control by antibiotics indicate that all effective compounds studied so far have their effect by altering the host plant susceptibility and not by direct action on the virus.

Another facet of the disease control problem is utilization of antibiotic-producing strains of microorganisms for soil and/or plant inoculation. Theoretically this should be the ideal way to control plant disease: simply inoculate the soil with the antibiotic-producing strain (which came from the soil originally, so would be in its natural habitat) and let it control the pathogen. What could be cheaper?

This aspect of plant disease control is not new. In fact, considerable research has been and is being carried out on this type of attack both in this country and in England, and the results appear sufficiently encouraging to assure us that this line of endeavor will be continued.

But not, however, without its problems. In the first place, antibiotic - producing microorganisms when added to soil which is not sterilized nor supplemented, do not produce enough antibiotic to be detected. Secondly, even if they did, a fair amount would have to be produced to have an effective level, because these compounds are usually rather unstable in the soil. Their stability depends upon the type of soil, chemical nature of the particular antibiotic concerned, the soil environment (acidity and other factors), and the type of microflora, as well as the type of vegetation growing in the soil.

To bring ourselves up-to-date in antifungal antibiotics, let us ask two questions. First, what compounds are now available and how effective are they? Second, what should we be looking for and why?

Materials Are Rare

The answer to the first question is simple. Antifungal antibiotics are rather rare. Most of the materials showing antifungal activity in the laboratory have not been tested sufficiently to indicate their value, or, if they have been tested, do not indicate real promise for one or more reasons.

The danger in extrapolating from laboratory tests is amply demonstrated in the case of Streptomycin. Results from laboratory screening of Streptomycin against fungi certainly would not suggest the effective control of the blue mold of tobacco found when applied in the field.

To answer the second question, "What do we need?" is more difficult. The ideal fungicide would be applied to the foliage by spray application; it would be absorbed by the leaf tissue and translocated throughout the plant, particularly downward to the roots, to act systemically both in prophylaxis and in therapy; it would not be toxic to the plant; and lastly it would be sufficiently stable so application would not have to be repeated. This type of compound sounds too good to be true. And it might well be. However, it serves as a goal.

Then, logically enough, we might ask, "What should be the intermediate objectives in striving for the goal?" Probably the best way to answer this is by asking another question: "What is the most important aspect of fungal pathology in terms of damage?" The answer is the soil fungi. These include damping-off and root rot organisms.

Since none of the antibiotics so

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far studied are translocated in a downward direction, the first step in locating the ideal fungicide will have to be screening for downward translocation.

In the meanwhile, we will have to look for antifungal compounds which can be applied to the soil. Finding a successful candidate to meet the rigid requirements of such a fungicide looks formidable. First, of course, the compound must be active against the pathogens involved. Second, it must not be absorbed by the soil. Third, it must be fairly stable under the soil conditions. Fourth, it must demonstrate little phytotoxicity. Fifth, it should not eliminate desirable microorganisms such as root nodule bacteria.

Effects on Growth

The second most important use of antibiotics after disease control is for growth effects in animals. This use is so well known, so well documented, and such a "going" industry that it would be superfluous to discuss its future at any great length. The only foreseeable changes in the future would be different dosage forms, different means of application, and replacement of compounds now used by newer, better ones.

The use of antibiotics for growth promotion in animals does raise a most important and fundamental question: "How do these compounds act in affecting the growth of animals?" There is considerable debate as to the mechanism of this action. Primarily, the investigators are in one of two camps, those that believe the effects are through direct action on the microorganisms in the intestinal tract of the animals affected, and those that believe that the effects are on the animals themselves.

There is an unbelievable amount of research data available on this controversy which supports both sides. Until animals which have been exposed to our natural environment can be rendered aseptic, the controversy will probably not be settled.

What animals have been affected and with which antibiotics? The active compounds have included penicillin, bacitracin, Aureomycin, Terramycin, Streptomycin and several others. The types of animals which respond to treatment include chickens, turkeys, pigs, mink, calves and rats.

This growth effect is not confined to the animal kingdom. Plants are affected in their growth by the presence of antibiotics. Advantage of this fact has not been realized in practical terms because of the cost picture and because of the ever-present problem of application. If applied to the soil, the antibiotics are adsorbed or otherwise inactivated. If applied to the leaves, the antibiotics will not move down.

Too, plants and plant parts can be rendered aseptic and grown indefinitely under these conditions, thereby enabling investigators to study the fundamental problem of mechanism of stimulatory action, so elusive in the animal field. Work done under aseptic conditions with plant tissue cultures, plant organs, and whole plants (both germinating seeds and the small, easily-manipulated duckweed plants) shows conclusively that antibiotics can stimulate the growth of plants, and that this then is not an effect on microorganisms.

Such results, quite naturally, prompted a rash of greenhouse and field experiments, some of which confirmed these results under natural conditions, some of which were entirely negative.

From all the available information one might arrive at the following working hypothesis: (1) Under certain conditions, some antibiotics will stimulate the growth of plants. (2) The more the conditions can be controlled, the better chance there is of obtaining the desired stimulation. (3) Under normal field conditions, the same problems arise as in disease control, lack of reproducibility due to soil, environment and the living material involved.

There are too many results demonstrating the effects of antibiotics on the growth and metabolism of plants to deny that such effects take place. What then does the future hold for their use in this field? The type of compound desired is once again one which can be applied as a foliar spray, can be absorbed by the leaf tissue, and can be translocated downward in the plant. If such a compound could be found, there is a great future for the use of anitibiotics in this phase of agriculture.

There are three main types of effect that could be of practical importance: (1) inhibition (herbicides, defoliants, algicides), (2) altered metabolism resulting in a change in yield of plant products, (3) stimulation (germination time, growth rate, or yield).

Let us consider the prospect of altered metabolism. A change in alkaloid content (either increased or decreased) could be utilized to good advantage. For example, if the change were a decrease in yield, this would be desirable if the plant were tobacco since it would have a lower nicotine content. If the change were an increase, this would be desirable if the plant were a drug producer.

Recent publications by Dr. E. Steinegger, in Switzerland, show that penicillin has a profound effect on Datura stramonium, increasing its growth and hence its alkaloid production, and further, changing the ratio of the alkaloids which it synthesizes.

Probably the third most important phase of agriculture, after disease control and growth effects, in which antibiotics might have a future, is in the field of insecticides.

$2 Billion Loss

Because of the two billion dollar loss they cause each year, insects should be given serious consideration by antibiotic producers. Not that there are no effective insecticides available. Quite the contrary. But, certain aspects of the insect control problem need a lot of help. The chances of antibiotics or other metabolic products of microorganisms competing with currently available insecticides for application on crop plants is hard to see under existing conditions, primarily because of cost.

However, when insecticides are applied to food and crops which are to be eaten, this is another matter. Here, an antibiotic which is an effective insecticide would be highly desirable, serving the dual role of protection against insects and food spoilage organisms, and still having a stability such that it would not be detectable by the time the food is ready for consumption.

Next in potential importance is the use of antibiotics in the preservation of foods. An enormous amount of research is currently being conducted in this field.

Preliminary evidence indicates that antibiotics might have a future in the prevention of spoilage: in vegetables (storage, in transit, and shelf-life), in meat and poultry, as well as in fish and shrimp. Various methods of applications are used in the prevention of spoilage: such as injection of whole carcasses in beef, dips of vegetables and poultry in low potency antibiotic solution, and the use of ice containing antibiotics for sea food.

It is in this field that there is a future for new specialized antibiotics, used so that strains of infective organisms resistant to the therapeutically effective antibiotics would not become prevalent.

When the correct compounds have been determined for the individual uses, and residue studies show figures acceptable to the Food and Drug Administration, this use will be off to a flying start, since a ready-made market is waiting.

In summary, one cannot help but feel that there is a definite future for antibiotics in the field of agriculture. In addition to the specific uses and specific markets listed thus far, what other features should be mentioned which have a bearing on this topic? Probably most important, is the point that the antibiotics now available in commercial quantities were discovered in screening programs based on medical needs, programs set-up with human therapy as their goal.

Each portal from discovery to ultimate production through which the compound must safely pass had as the key to open it, one of these questions: "Is it active against human pathogens; is it toxic to humans; is it stable enough in the human body?", and similar ones. Even so, those antibiotics have come a long way in non-medical uses.

Therefore, it is with great optimism that we look forward to a program of searching for antibiotics based on agricutlure's needs, where the questions asked at every turn will have "agriculture" substituted for "medicine."

Industrial Instruments Expands Operations

CEDAR GROVE, N.J. — Industrial Instruments, Inc., Cedar Grove, N.J., manufacturers of electrolytic conductivity measuring and control equipment, has announced the purchase of Wood and Metal Products, Bloomfield Hills, Mich. Wood and Metal Products has been engaged in the manufacture of soil moisture measuring devices. All facilities and operations of the Bloomfield Hills plant have been moved to Cedar Grove, N.J.

Further expansion by Industrial Instruments includes all future production and sales of the Bouyoucos soil moisture meters and the Bouyoucos automatic irrigation equipment formerly manufactured by John Hewitt of Lansing, Mich.

Western, California Weed Control Groups Plan Joint Meeting

SACRAMENTO—Walter S. Ball of Sacramento, president of the Western Weed Control Conference, has announced that his group will meet jointly with the California Weed Control Conference in Sacramento and Davis, California, Feb. 15-17, 1956.

Mr. Ball, chief of the Bureau of Rodent and Weed Control of the California Department of Agriculture, has just returned from Boise, Idaho, where plans for the Sacramento joint sessions were approved by the Western Conference. Paul Dresher, president of the California Weed Conference, was unable to attend the Boise meeting but was represented by Oliver Leonard, secretary.

Nearly 1,000 delegates are expected for the Sacramento conference, according to Mr. Ball. The first two days' meetings will be held in Governor's Hall on the State Fair Grounds. The final day's sessions will be held at Davis where a program is being arranged by the Division of Agricultural Engineering, College of Agriculture, University of California.

Outstanding authorities in the United States, Hawaii and Canada will participate in the conference.

Charles E. Johanningmeier In New IMC Position

CARLSBAD, N.M. — Charles E. Johanningmeier has been promoted from assistant construction foreman to design engineer by International Minerals and Chemical Corp. He had been acting as assistant foreman during a period of heavy construction. In the new position he will be responsible for designs and specifications of equipment layouts, and also be in charge of the engineering office for engineering and maintenance. Mr. Johanningmeier first came to International in 1948, and has now had about 15 years experience in engineering design.

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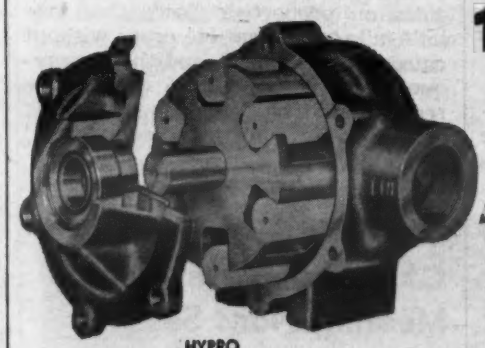

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BURLEY QUOTA

(Continued from page 1)

At least two thirds of the farmers voting in the referendum must approve the redetermined quota if it is to be effective. If the redetermined quota is not approved, no quota will be in effect and no price support will be available on the 1955 crop of burley tobacco. All persons who were engaged in the production of the 1954 crop of burley tobacco are eligible to vote in the referendum.

Tobacco industry experts in Washington say that they cannot estimate the reaction of the burley producers no matter what decision may be taken in the marketing referendum. They believe, however, that individual initiative will encourage maximum output since the impact of acreage allotments and marketing quotas is now pinching the burley growers.

Several groups in the burley area are encouraging growers to approve the new quotas.

Burl St. Clair, Falls of Rough, Ky., president of the Kentucky State Farm Bureau Federation, speaking before growers at the organization's state headquarters, held that if the acreage reduction program fails, Kentucky's burley growers may suffer a $100,000,000 reduction in marketing value of the burley crop of 1955.

Mr. St. Clair has been directed to appoint a committee of 13, to represent groups and organizations, whose interests are involved, to start a campaign program favoring a "yes" vote on control in the state referendum. Headquarters will be at the K.F.B.F., headquarters office, at 120 Hubbards Lane, St. Matthews, Ky.

W. L. Staton, Lexington, Ky., executive secretary of the Burley Tobacco Growers Cooperative Assn., contended that controls and supports must be voted, to maintain prosperity. He held that the average price of burley tobacco for the 10 years prior to controls was 16¢, and for the ten years under controls and supported market price, the average has been 47.2¢ lb.

"If the 1955 burley crop is not subjected to controls and parity support the price would average less than 20¢ lb.," was the statement of Randolph Taylor, of Washington, D.C., executive secretary of the Burley & Dark Leaf Tobacco Export Assn.

Members of the Kentucky Bankers Assn. have held several district meetings in the state, in an effort to show the farmers that the situation is serious.

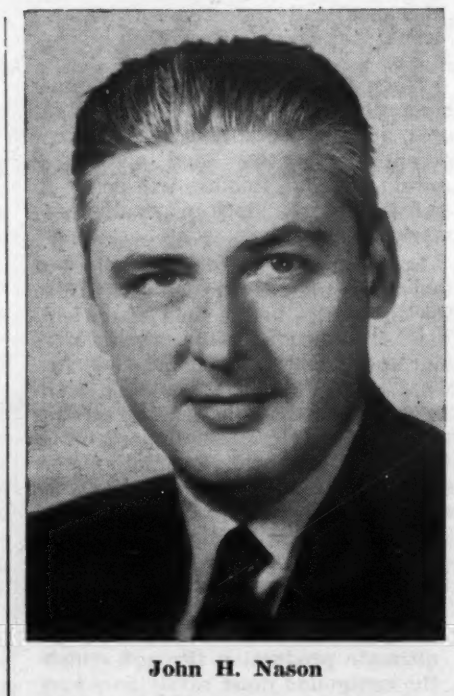
Unless growers do agree to the program there is every reason to believe that many banks may not readily advance money for fertilizers and labor.

Russell Hunt, Field Agent for the University of Kentucky's agronomy department, speaking before a gathering of the various chambers of commerce, meeting in Louisville, held that lack of a tobacco price control program would wreck the whole state of Kentucky. He held that there was grave danger that the tobacco program would collapse.

Meeting of Ohio Pesticide Institute Set

WOOSTER, OHIO — The annual meeting and field tour of the Ohio Pesticide Institute will be held at the Ohio Agricultural Experiment Station, Wooster, Aug. 9-11, according to an announcement by Dr. J. D. Wilson, secretary of the group.

The first two days of the meeting will coincide with a meeting of the North Central Division of the American Phytopathological Society, also scheduled to be held in Wooster. The APS meeting begins Aug. 8 and continues through Aug. 10.



John H. Nason

Joseph Mullen, Jr.

R. H. Hodgson

Olin Mathieson Appoints Managers For Agricultural Chemicals Divisions

BALTIMORE — Olin Mathieson Chemical Corp. has named general and sales managers for its agricultural chemicals divisions.

John H. Nason is general manager of the eastern fertilizer division, with headquarters at Baltimore, and Joseph Mullen, Jr. is general manager of the western fertilizer division, with headquarters at Little Rock, Ark.

R. H. Hodgson, formerly in charge of domestic sales in the company's John Powell Division is now manager, retail sales, of the eastern fertilizer division. Donald T. Fangmeyer, formerly manager of bulk superphosphate sales, is manager of the eastern fertilizer division's wholesale department.

G. D. Baerman, formerly with the John Powell Division, is manager of agricultural sales in the expanded insecticides division. Paul Williams is assistant manager. Alfred Weed, also formerly with Powell, is manager of the household sales department.

Both the eastern fertilizer and insecticides divisions are headquartered in Baltimore.

In the western fertilizer division G. A. Wakefield is sales manager and Paul F. Schowengerdt is assistant sales manager. David Dickey is sales manager for the western sulphur and acids divisions. These divisions are headquartered at Little Rock, Ark.

R. L. Hockley, vice president, is responsible for the eastern fertilizer division and the insecticides division. R. S. Zipse is general manager of the insecticides division.

Sam L. Nevins, vice president, is responsible for the western fertilizer division and western sulphur and acids division. W. W. Lehle is general manager of the western sulphur and acids division.

2,4-D Spray Regulations Considered at Hearings

SAN FRANCISCO—Are the present regulations of the Bureau of Chemistry of the California State Department of Agriculture too rigid in regard to restrictions on the spraying of 2,4-D weed killer and other injurious herbicides?

This question is being pondered by the bureau in a series of meetings throughout the state with crop raisers who find they are seriously inhibited in proper weed control under the existing rules.

The present regulations prohibit application of injurious herbicides within one half mile of a susceptible crop of ornamental planting belonging to any person other than the owner of the crop being treated, unless there is a continuous air flow away from such susceptible crop or planting during application.

The crop raisers contend that it is possible to spray such injurious herbicides on properties closer than one half mile to susceptible crops without causing any damage, and they are requesting the bureau to change the regulation. The hearings are being attended by bureau personnel and petitioners.

Western Agricultural Chemicals Assn. Meeting Plans Set

LOS ANGELES, CAL.—Program plans are being formulated for the Western Agricultural Chemicals Assn. meeting scheduled to be held at the Hotel Clark, Los Angeles, June 21, according to C. O. Barnard, San Jose, secretary of the group.

Speakers will include Dr. George C. Decker, Illinois Natural History Survey entomologist, president of the Entomological Society of America; John F. Neace, manager, Marsh Aviation Co., Phoenix, Ariz., and Lea S. Hitchner, executive secretary, National Agricultural Chemicals Assn., Washington, D.C., according to Mr. Barnard.

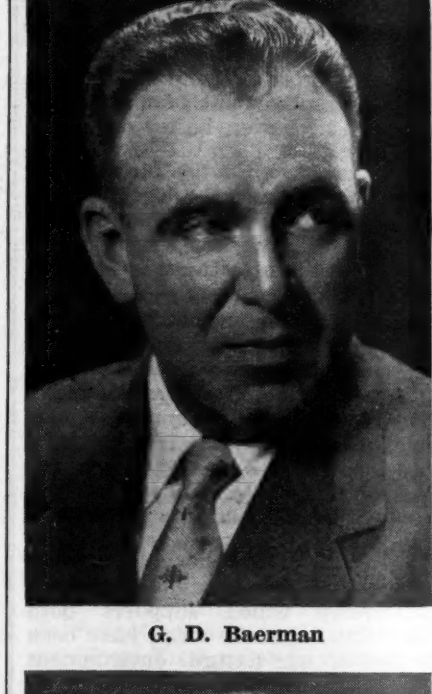
A "get acquainted" social hour will precede the luncheon and adjournment will be in time for those in attendance to journey to Riverside, Cal. for the meeting of the Pacific Branch of the Entomological Society of America which begins June 22.

Georgia Agency Set Up For Livestock Loans

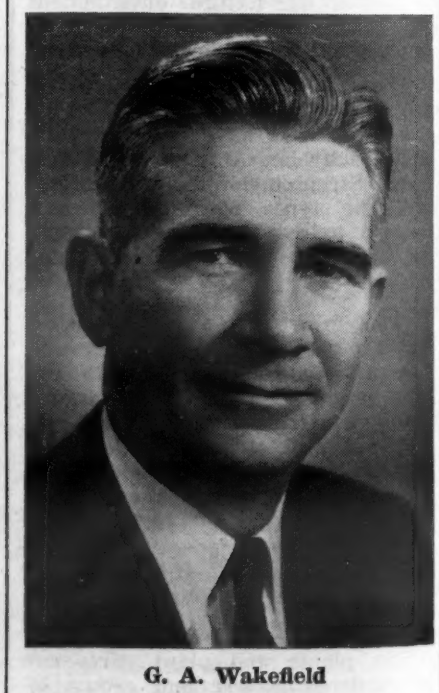
ATLANTA — A Georgia livestock authority which will guarantee bank loans to farmers who wish to switch from row crop farming to livestock or egg production has been activated. Money borrowed in this manner may be used for purchase of livestock, swine, sheep, for pasture improvement and for egg production. It cannot be used for production of poultry for sale, since the authority feels that the field is already adequately financed.

Assets of almost $2,000,000 are available to the authority. Diversification in agriculture is the goal of this program, but it is hoped that farmers will also keep large acreages under row crop cultivation.

To secure a loan, the farmer must confer with his county agent to work out a detailed plan for improving his farm. The farmer then takes the county agent-approved plan to his banker who works out loan details. The farmer must pay 6% annual interest on the loan, 5% to the lending bank and 1% to the authority. The 1% interest for the authority will be used to cover losses, if any.



G. D. Baerman



G. A. Wakefield

District Increases Mosquito Control

SACRAMENTO — Trustees of the Sacramento - Yolo Mosquito Abatement District have agreed to increase the tax rate from 5 to 6¢ per $100 assessed valuation and to intensify control measures. The higher rate is expected to bring in $286,000 for the 1955-56 fiscal year, compared with $249,000 raised during the current year.

George Umberger, superintendent of the district, has 30 regular employees and additional help will be hired during August and September when the danger of mosquitoes spreading encephalitis is greatest. A heavy spraying program already is under way in all water areas in Sacramento and Yolo counties to destroy mosquito larvae.

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A SPECIAL CROPLIFE DEPARTMENT TO HELP RETAILERS IMPROVE MERCHANDISING KNOW-HOW

SHOP TALK OVER THE COUNTER FOR THE DEALER

By EMMET J. HOFFMAN
Croplife Merchandising Editor

The growth of the farm chemical industry has in no small way been brought about by credit financing in which the dealer plays a part. Granting credit is essential in modern economics, and credit makes for a healthy market situation if it is granted wisely.

The reverse is also true. Where unwise credit practices are used, they break down healthy markets which is not good business for the dealer or the buyer. Credit is a privilege which can be easily abused.

Good credit management involves selecting your credit customer. Don't let him select you.

Build an understanding with your credit customer. Make sure he understands when payments are to be made.

Follow up all accounts. The collection follow up is to make sure the understanding about the payments is carried out. Secure mortgages on operations where credit reports indicate their need for protection. Interest on credit and insurance, if obtainable, should be included in the mortgage.

Sell for Cash First

It is always safe and best to sell for cash first. Only where necessary should credit be granted and then only on short credit terms.

It's a good idea to set up fixed charges or rates of interest on all slow accounts. Charge a fixed sum or interest on all long term accounts. And what is very important—develop a strong relationship with your bank or banks.

Facilitate an arrangement with your bank on fertilizer loans. Make sure your employees and salesmen are trained in credit control.

Always remember that credit is your money or merchandise being used by someone else. It is your money. Protect it and use it wisely.

Related Lines

Many dealers across the country are finding that in addition to their complete lines of fertilizers, insecticides and weed killers, their sales are being bolstered by allied lines. Adding allied lines, of course, has to be determined by the locality of the dealer. But by and large one can notice such things as sanitation products, spray and fertilizer (rental or for sale) equipment, garden and farm needs, stockmen's needs, livestock and poultry feeds and remedies, fencing supplies, feeders and waterers, nursery supplies and pet foods and needs being added by many farm chemical dealers.

Most of these dealers are happy about diversifying, say they should have done it sooner and claim that the allied sales have boosted sales of their farm chemical lines.

Big Pesticide Season Starts in Massachusetts

BOSTON — A big spring buying season in agricultural chemicals is getting underway in Massachusetts and, after the devastating march of the army worm last year, the heavy infestation of insect pests caused by a wet spring and the weed threat to crop values, farmers are pesticide minded.

April is here. It's the time of year when faith is higher than the "sap" with farm people. It's faith at work when they go into the dealer's place of business and purchase seeds of any kind. It's faith working when they purchase lime and fertilizer.

County agents and dealers want to increase their faith by advising them to use the best. When they start planting the good seeds, backed up with sufficient amounts of N. P. K. that's hope. They hope they will produce a good yield.

You know, farmers and school kids have more faith and hope and free advice than any group of God's children. They hope all the grasshoppers, Mormon crickets, armyworms, corn borers, and boll weevils have taken refuge behind the Iron Curtain. Recently we were troubled with an outbreak of the Oriental fruit moth (Jitters).

We've talked about faith and hope. What about love? I believe good farmers love to farm better than any other group loves to do its respective work. A good farmer nowadays is a pretty smart bird and really it takes a pretty well informed dealer and well informed county agent to keep up with the best ones.

Farmers are akin to nature. Nature produces all she can. She tries just as hard to produce in wet years as she does in dry years. Farmers try to produce all they can, all the years. We have to hand it to them, for after all the greatest of the sciences is the feeding of animals and human beings.

P.S. Get the farmer to promise his wife right NOW, that he'll work the garden Monday morning, instead of Saturday afternoon.

Pennsylvania Dealer Advises Prospective Customers to "Try It Before You Buy It"

Try it before you buy it, is the way Sam Binkley merchandises liquid nitrogen to doubtful customers that visit the P. H. Gehman Store, Denver, Pa. Although this store has been merchandising dry fertilizers for many years, liquid nitrogen has just been catching on in this region for the last two years.

"We tell our customers that they must be pleased with the liquid nitrogen that we are selling or they don't have to pay for it," Mr. Binkley explains.

"When they buy this item for the first time, we attach the sales slip with cellophane tape to the containers and tell the customers that this is a permanent reminder to them, that if they are unsatisfied with the results, all they have to do is return the container to us and we'll refund their money, the amount noted on the sales slip. And although we have been selling this way to hundreds of customers, we have yet to make a refund."

In promoting liquid fertilizers, this dealer has made a special display of them in the store. One wall rack section has been devoted to this line and it displays them in the quart and gallon sizes. Large drums of fertilizer are retained in the warehouse because these are delivered by company truck.

Once a customer buys nitrogen, Mr. Binkley stays in close contact with that customer to get his reaction. As only favorable reaction has emerged, each user becomes a reference to the next skeptical customer.

"Customers using insecticides, weed killers and other liquids are natural prospects for liquid fertilizer," explains Mr. Binkley. "They already have a sprayer and they can do two jobs at one time. They can mix the insecticide with the liquid nitrogen and one spraying does two jobs."

The store rents sprayers at a flat one dollar per day. Actually this charge is made just so that the sprayer is returned immediately after use. The customer is never told this, but he is pleased to get a refund.

Customers usually start using liquid nitrogen on their lawns, gardens and small vegetable patches to see how it turns out. As soon as the results are evident, they start making larger purchases. Mr. Binkley figures out the area that they have to cover and can then suggest the proper quantity.

Customers using liquid fertilizer for the first time are so surprised by the results that they usually tell their friends and neighbors about it. This starts inquiries at the P. H. Gehman store and Mr. Binkley has new prospects to work on.

"If a customer is still skeptical, I will ask if he will allow me to make a sample spraying on his lawn with our fertilizer and equipment," he says. "Customers seldom refuse such an opportunity and I do the job. If the customer doesn't call me to tell me the results, I call him. Inevitably, it leads to a purchase."

Several carloads of dry fertilizer are sold by this store annually but the firm often has wanted to get more small order business from part time farmers or 'back yard' fanciers. The addition of liquid fertilizer has opened the way to these extra sales.

Once Mr. Binkley gets a customer to buy a sprayer, he feels that he has "sewed" up a permanent customer. He wouldn't invest his money in this equipment if he didn't intend to use it permanently. So to make sure that he gets the return business, he keeps a separate record of his fertilizer customers.

These customers are listed on 3" x 5" file cards. The quantities they buy and the area that they spray are part of this record. Mr. Binkley knows how many sprayings the quantities purchased can go and he figures the first one to be within a few days after the purchase. Then he figures six or seven weeks for the next. By

(Continued on page 11)

PENNSYLVANIA DEALER — Paul H. Gehman, owner of the P. H. Gehman store at Denver, Pa., is pictured above showing a "back-yard" farmer his stock of liquid fertilizers and pesticides. Trial basis promotion and customer follow-ups help this dealer build business.

FARM SERVICE DATA
Extension Station Reports

Giving plant roots all the "leg room" they need to forage for moisture and nutrients, can boost yields of some crops from 50 to 80% in well fertilized soils, according to Dr. Russell B. Alderfer, Rutgers University soils scientist.

This "leg room," according to Dr. Alderfer, depends on the soil's physical condition. Porous, well structured soil gives roots all the room they need. Tight, compacted soil hems them in. Dr. Alderfer said that the most important reason for building and maintaining a good physical condition is to provide sufficient room for the roots.

In soils well stocked with plant nutrients, this good physical condition can help boost yields of tomatoes by 50%, sweet corn by 60%, and lima beans by 82%, he reported.

★

Acid soils in West Virginia remain unproductive "year in and year out" for lack of lime, specialists of the Agricultural Extension Service, West Virginia University, report.

Frequently, when farmers submit soil samples for analysis they indicate that alfalfa is to be seeded as soon as possible. Many of these soil samples show such extreme acidity that alfalfa production would be impossible. If clover or alfalfa were planted, labor, seed, inoculation, and fertilizer would be wasted.

A soil sample can be collected in 15 minutes, but those few minutes could mean the difference between success or failure of a valuable crop, the Extension specialists emphasized.

While most West Virginia soils need more lime, many farms and individual fields already have enough lime, the specialists pointed out. Adding lime to well-limed fields, they explained, "would be like adding oil to a full crankcase of a tractor or automobile engine. The oil would be wasted—so would lime added to a well-limed soil. Money invested for lime to be used on high-lime soils would do much more good if used to purchase more fertilizer. Where lime is needed, good production is impossible without it—where lime is not needed money spent in buying more is wasted. Invest the dollar where it will do the most good, and use a soil test as an aid to insure a sound investment," the specialists advised West Virginia farmers.

★

The Agriculture Extension Service, University of Delaware, recently issued 1955 recommendations for insect and disease control on vegetable and 1955 spray schedules for control of fruit insects and diseases in orchards and home plantings.

★

Methods are now available which make much easier the control of scale insects and aphids on ornamental plants. Research conducted by John C. Schread, entomologist at the Connecticut Agricultural Experiment Station, using new insecticides for control of these pests, has yielded very satisfactory results. Mr. Schread has summarized his findings in a new Station bulletin.

Pests discussed in the bulletin include the hawthorn aphid, the viburnum aphid, aphids on snapdragon, the pine bark aphid and the following scale insects: European elm scale, juniper scale, hemlock scale and the soft brown scale on ivy, camellia and avocado. For all of these, new and improved control measures have been found, and are discussed in the publication. Rates and methods of application are given.

★

Fertilizing pastures this spring can give cattle a two to three weeks' jump on grazing, University of Kentucky agronomists report. They point out that fertilizer added now will provide young legumes and grasses with an easily available supply of plant food. They will make a quicker growth than if they have to wait until the soil warms up enough to release the plant nutrients already in the soil.

★

Fertilizer recommendations for West Virginia farmers are listed in Extension Circular 371, "Fertilizers For Profitable Production," issued by the Agricultural Extension Service, West Virginia University. The publication is now available at all county agricultural extension offices in the State, R. J. Friant, extension agronomist at the university, reports.

Prepared by staff members of the department of agronomy and genetics and the department of horticulture at the WVU Agricultural Experiment Station, the information in the circular is based on the experience gained from field experiments and from soil analyses from widely separated areas of the state, Mr. Friant explained.

Subjects treated include selecting the right fertilizer (ratio and amount), liming, soil testing, adapted varieties and certified seed, sources of nitrogen fertilizers and references to other publications. This is a brief table which gives some of the more common sources of nitrogen which may be used for topdressing or sidedressing of crops.

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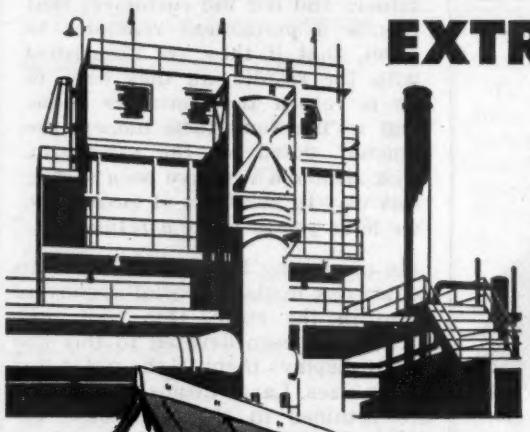

New fertilizers and new equipment today are saving more work and making more money for farmers—and dealers—than ever before. The ferment in the fertilizer business is just getting underway, with big, new plants, with labor-saving machinery and new methods of feeding crops with modern, value-packed fertilizers. Nitrogen Division, long-time leader in fixing nitrogen from the air for fertilizer, is expanding new plants built as recently as last year. This leader in the fertilizer field is producing concentrated new products along with older ones to make farming a better paying business. As an ARCADIAN supplier to farmers, you can make good money on this constantly expanding fertilizer and equipment service to farmers. Sell the "hot" line—sell ARCADIAN!

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New Pest, Saddled Prominent, Invades Massachusetts-New York Area Forests

BOSTON—A new pest has invaded Massachusetts and, teaming up with the gypsy moth, is attacking Bay State forests. It is a native North American caterpillar, the saddled prominent, and it has already defoliated nearly 6,000 acres of hardwood forests on the New York-Massachusetts border.

The infestation was first detected on the New York side of the state line where most of the damage occurred. The state's chief pest control officer, Harold L. Ramsay said:

"This is the most serious outbreak of this particular pest that we have ever known. But, it's not under our jurisdiction yet, and won't be until it is recognized by the General Court as a nuisance."

The Massachusetts infestation comprises roughly 1,910 acres along a 10-mile stretch of the Taconic Range between Williamstown and Hancock.

The saddled prominent seldom gets out of hand, the state entomologists reported, but infestations were discovered on the border last summer.

Hope that the aerial spray program aimed chiefly at the gypsy moth in Berkshire County will confine the saddled prominent to the area it is known to have infested was evidenced by officials of the Natural Resources Dept.

"But, we have no way of knowing that we can," Mr. Ramsay said.

Mr. Ramsay and Warren Harding, U.S. Department of Agriculture entomologist, currently attached to the state forestry department for the continuing war against the gypsy moth, feel confident that the saddled prominent will not get out of hand as the gypsy moth did. The gypsy moth got its start right near Boston in Medford and has already cost New England taxpayers more than $75,000,000 and will undoubtedly cost millions more before it can be eradicated.

The saddled prominent's odd name, the entomologists explained, stems from the prominent U-shaped mark in the middle of its back resembling the saddle on a horse. The pest can defoliate twice as large an area of forest land as an equal number of the more notorious gypsy moth caterpillars.

The pest is a gourmet of sorts, Mr. Ramsay said. "They cut big holes out of the middles of the leaves they feed on and the ground around a tree under attack is quickly littered with punched out leaf sections. The gypsy moth, by comparison, is a glutton and eats every bit of leaf surface leaving nothing but the stalks.

"Also, the saddled prominent eats later than the gypsy moth, and they can kill more trees with half the population. The pest with the saddle on his back is more selective in its feeding than the 'gyp' concentrating mainly on maple and beech and passing up the conifers entirely. As a native of the continent and a part of nature's balanced program for the region, it has many natural enemies. Until last year, these insect parasites and beetles managed to keep the saddled prominent within decent bounds."

In mid-August last year, the New Yorkers discovered the outbreak on the sides of Misery Mountain, did a rush airplane spraying job to confine the infestation's westward expansion and notified the Massachusetts Natural Resources Division as to what was going on.

Massachusetts so far has taken no preventive action, pleading lack of funds and the Legislature's failure to recognize the saddled prominent as a public nuisance.

They point out that comparison of the new pest with the gypsy moth is odious because the new "public enemy" has plenty of natural enemies while the gypsy moth has none at all.

"We hope that the outbreak won't spread or be repeated on the same large scale," Mr. Harding said. "But, meanwhile, about all we can do is wait and see what happens.

"In the Berkshires, it should not be a problem, because about 60,000 acres will be sprayed this year for the gypsy moth."

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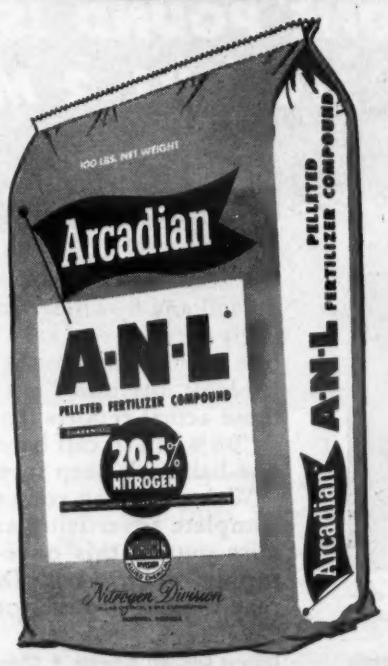

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PENNSYLVANIA DEALER

(Continued from page 9)

the third period, he will call that customer if he didn't buy enough for three sprayings or more at the time of the initial purchase.

"Usually, customers will buy enough for two sprayings at a time. If they don't come in to make a purchase when the time for third spraying comes along," Mr. Binkley explains, "I contact them myself. They often place an order over the phone or promise to come in the store shortly."

Mr. Binkley sees a tremendous future for liquid fertilizer in this area and he wants to get in on the "ground floor." He feels that this can be done by getting customers started using it, and following them up consistently until they become used to calling for additional quantities themselves.

NEW CORN HYBRID

ITHACA, N.Y. — A new breed of "natural detasseling" corn promises to eliminate the need for costly hand detasseling by northeastern corn breeders. Prof. Herbert Everett of Cornell's plant breeding department who perfected the corn—called Cornell Experimental Hybrid T—says it also promises farmers increased yields by providing seed corn that is for the first time 100% hybrid.

Doing Business With

Oscar & Pat

Oscar Schoenfeld, the frugal partner in the farm supply store of Schoenfeld & McGillicuddy, was busy figuring discounts and other matters at his desk when the office door opened. As Oscar looked up he saw about 15 to 20 high school boys and girls tramp in, chatting and laughing and acting happy and foolish like only carefree teenagers can. Under their arms each carried some type of sign, but Oscar couldn't quite make out what they were.

"Oh, hello, Mr. Schoenfeld," said a pretty red-headed little girl of 15, whom Oscar recognized as the daughter of a farmer named Schmidt on Rt. 3. "Is Mr. McGillicuddy here?"

"No, he's out on a call," Oscar said suspiciously. "What's he been up to now?"

All the kids laughed at that. "Can you imagine Mr. McGillicuddy being up to something?" laughed Myrtle Schmidt, the redhead. "Isn't that some info?"

"What's info?" Oscar asked glumly.

Again the kids laughed. Oscar did not like this laughing. He had the feeling the kids were beginning to laugh at him. "Oh, that's just high school slang for 'the dirt,'" said Myrtle Schmidt. "We're like that, you know."

At this moment tall, bushy haired Pat McGillicuddy came in. "Hi, Mr. Mac!" yelled several of the youngsters. "Been up to something?" And again they laughed, much to Oscar's irritation.

"Got your signs?" Pat asked with a smile.

"We sure have! And have you got the movie tickets?"

Pat laughed. "You bet I have. I wouldn't forget them. Let me take a look at these signs one by one as you hand them to me, and then I'll parcel out the tickets."

The boys and girls stood in line, handed their signs to Pat who examined each quite carefully, and apparently with pleasure. "Good! Good!" he said repeatedly. "You did excellent work. Just what I wanted. Thanks a lot." And then he began handing out the theater tickets, two to a person. Oscar, his face paling as he thought of the cost, counted 38 tickets given out to 19 youngsters.

Laughing and shouting, the teenagers tramped out of the farm supply store. Even Tillie, the plump bookkeeper, had a smile on her face as she watched them go. For a moment it seemed that her face was younger, as if she were recalling those long ago, magical, wonderful days when she was a teenager, and happy.

Now the farm supply store was strangely quiet.

"Well," said Oscar finally. "Thirty eight theater tickets will set us back quite a sum. And for what?"

Pat turned to look at his partner, and his face darkened a little. "For a new display idea," he said.

"But we had a display last week," Oscar said critically. "Do we have to have a different one each week?"

"This idea can't wait," Pat said. "Farmers are buying their fertilizer and seed corn right now. This display, using the signs the ag class kids made for us free, will show farmers all the kinds of pests that attack corn and lower yields."

"Oh, that!" Oscar said disappointedly. "That won't sell any fertilizer for us."

"It may sell insecticides," Pat said. "Now that farmers are buying seed corn is the time to make them realize they'll have to control insects like the corn borer, the corn rootworm and even the giant foxtail weed if they want big crops.

"I'll place each of these signs, showing pictures of the insects and weeds in a circle on a big piece of plywood lying flat on wooden horses. Then I'll dump a couple bushels of ear corn in the middle, with a sign saying, 'These Insects and Weeds Will Cut Your Corn Yields. Control Them With Our Chemicals.'"

"Will farmers pay any attention to that display?" Oscar said critically.

"I think so. You see alongside each sign the kids made for me showing the insect or specific weed, I'll place a can or sack of the insecticide and weed killer which is recommended for that pest. Then farmers can see exactly what they'll have to buy, and we'll urge them to buy those chemicals now instead of waiting until the season is under way."

"But those movie tickets—they cost a lot just to get the ag class kids to paint signs for you."

Pat smiled. "The theater manager made us a low price, Oscar. He knows that those kids will boost his theater and show the tickets to their families and friends. We are paying exactly 40¢ a ticket for 38 tickets or a little more than $15 total."

"Well," said Oscar with his characteristic gloominess. "I hope that we sell that much in pesticides to get our costs back."

Pat shook his head. "We are getting our money's worth, Oscar. Why, did you know that the other day the newspaper editor came to the high

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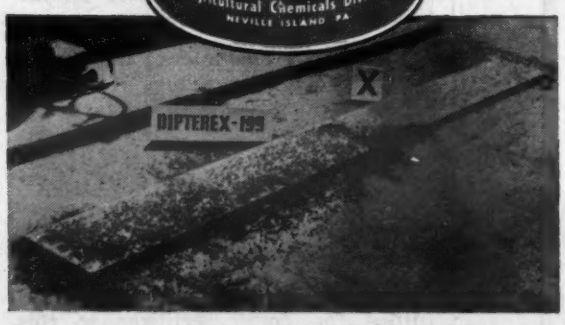

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hool ag class and took a picture of ose kids making their insect signs, d with Mr. Hagerson, the ag acher, and myself standing nearby atching them?"

"Will that sell any fertilizer for us, pesticides?"

"The editor said he would print he picture and a story of the roject," Pat went on eagerly. "We an clip the ad and post some of hem around the store. That will make more farmers read it and hink of buying chemicals to con- rol the corn pests and weeds. You've got to admit it, those pic- ures the kids drew are very life- like. Just take a look at that corn- worm drawing."

Oscar shook his head. "If you would pend less time with your crazy pro- otions and spend more time out alling on delinquent farmers, our ate of loss would be way down. Col- ct on what we already sold rather an try to get more poor accounts the books. That's what I be- eve in."

Pat said no more. He sat down and e g a n thumbing through a farm agazine. Oscar could throw cold ater on almost any idea he ever ad. But—a bright thought struck im—despite these differences, he and scar made money last year, in fact nice profit. So—things couldn't all e bad, like Oscar thought. Maybe, at thought, he and Oscar were good r each other—in business!

Most Important" nsects Listed for Northeast States

WASHINGTON — The "most im- rtant" insects in several of the rtheastern states have been listed entomologists in the states.

In naming the insects, considera- on was given to damage caused by e insect, its potential for damage d the need and cost of control. The t was published in a recent issue the U.S. Department of Agricul- re publication, "Cooperative Eco- mic Insect Report." Below are the tings for northeastern states.

Delaware — corn earworm, alfalfa eevil, seed-corn maggot, pea aphid, rn sap beetle, cabbage looper, Euro- an corn borer, subterranean ter- ite, flower thrips and strawberry ider mite.

Maryland—corn earworm, alfalfa eevil, pea aphid, codling moth, spit- ebug mites, cutworms, cattle grubs, ngoumois grain moth and flea beetle.

Massachusetts—apple maggot, aph- s, mites, armyworm, corn earworm, pinach leaf miner, gypsy moth, Jap- nese beetle, European earwig and rmites.

New Jersey — two-spotted spider ite, corn earworm, potato leafhop- r, meadow spittlebug, pea aphid, dling moth, seed-corn maggot, cab- ge looper, eastern field wireworms d plum curculio.

Rhode Island — aphids, Japanese etle, house flies, flea beetles, leaf- ppers, corn earworm, birch leaf iner, mosquitos, earwigs and ticks.

Quote

"Unchecked depletion of the coun- y's soil fertility could result in the ventual destruction of its complex dustrial economy."—Lloyd E. Par- in, former president, Soil Conser- tion Society of America.

ORE INFORMATION WANTED

NEW HAVEN—More information weed killers and their adaptation use in nurseries was urged by e Connecticut Nurserymen's Assn. a recent meeting here.

Chemical Control of Weeds Shows Big Growth in Vermont

BURLINGTON, VT. — Vermont's interest in chemical weed control has grown rapidly during the last few years, reports T. R. Flanagan, agronomist at the University of Vermont.

The use of herbicides to kill weeds was virtually an unknown practice in this state prior to 1950. A few of the better advised farmers were using 2, 4-D and perhaps one or two other chemicals. Since then the acreage sprayed has increased tremendously each year, and the number and variety of herbicides have increased many times over.

The total acreage sprayed for weed control in 1954 was 2½ times as great as that in 1953. The number of spray rigs in use has also increased. There were almost 100 weed sprayers in the field in 1954, 80 of which were owned and operated by farmers. In 1953 the Vermont farmers were operating only 44 rigs.

In 1955 the total area of land sprayed for weed control exceeded 5,000 acres, and 3,750 acres of corn were sprayed, twice as many as the previous year. Over 1,000 acres of small grains were sprayed for weed control. Several hundred acres of pasture and hayland were sprayed.

These weed sprayers were also used for applying insecticides in many areas. Much army worm, spittlebug and leaf hopper spraying was done throughout the state in 1954.

Lime Boosts Asparagus Yields, Researchers Say

WALTHAM, MASS.—Experiments at the Field Station of the University of Massachusetts here have shown that lime boosts asparagus yield.

"Many gardens in Massachusetts are not producing satisfactory plants because of acid soil," researchers reported. "In such cases lack of lime is often the factor which limits growth.

"In addition to neutralizing soil acidity, the addition of lime unlocks plant food and makes it available for the use of the growing plants. Lime provides some available calcium and magnesium, which are needed in small amounts as plant food. Lime does not take the place of fertilizer, but is a supplement."

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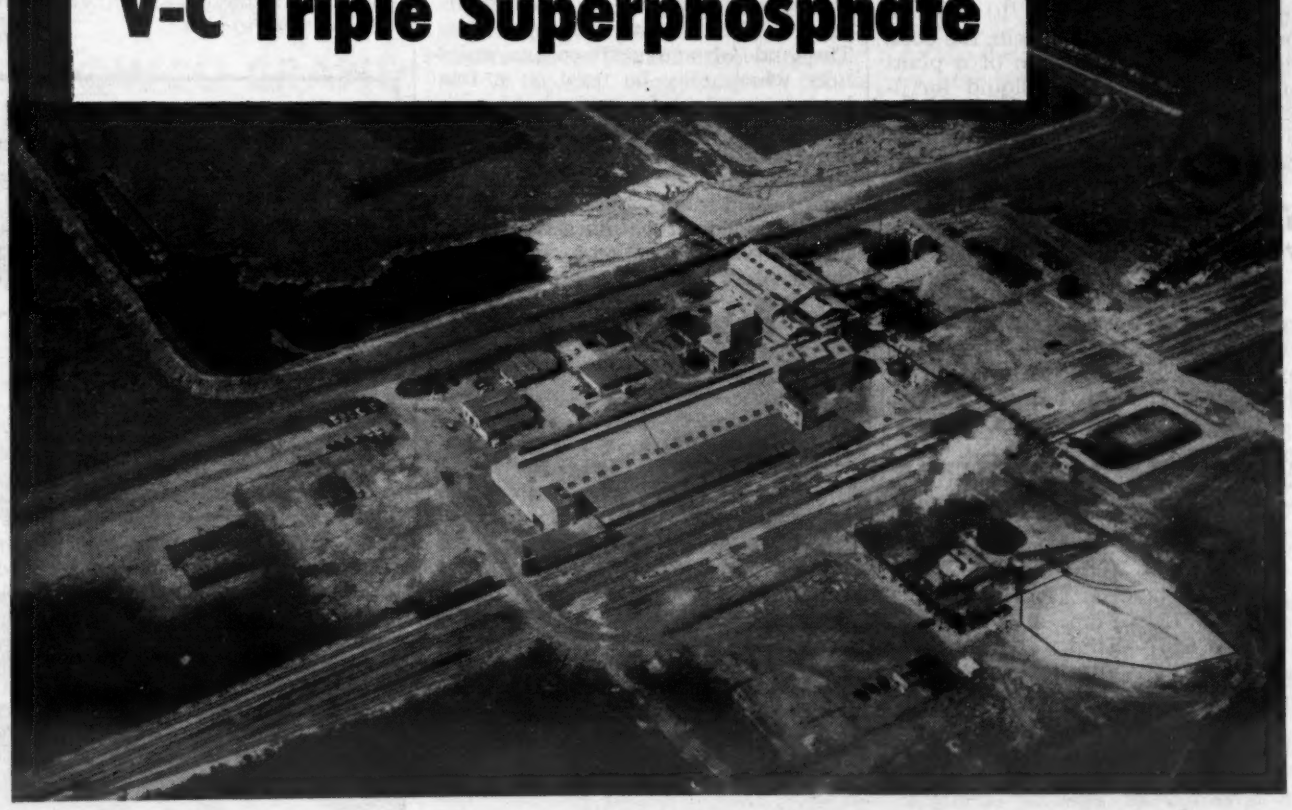
WITH NATURAL-TEXTURE
V-C Triple Superphosphate



Quality is the watchword at the big, new V-C Triple Superphosphate plant at Nichols, Florida. Here, V-C Triple Superphosphate is produced so that it retains its natural, desirable texture—a big help to you in simpler, faster ammoniation in your plant. This superior texture also helps you cut down on recycling at your mixing machines. V-C Natural-Texture Triple Superphosphate is backed by many years of experience and production know-how. V-C pioneered in the production of concentrated superphosphate as far back as 1907, when it put into operation, at Charleston, S. C., the first large-scale plant in the United States.

Depend on V-C to supply your Triple Superphosphate needs. Newly-expanded facilities and years of skill in production now combine to bring you Natural-Texture Triple Superphosphate designed to fit your production programs. Write or call *now!*

VIRGINIA-CAROLINA CHEMICAL CORPORATION
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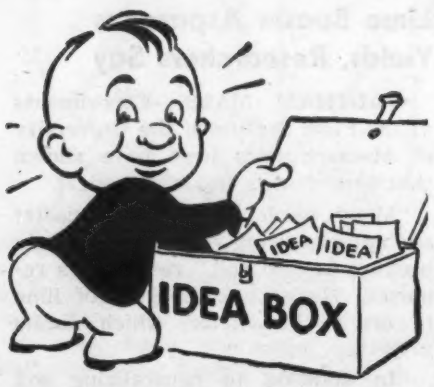


What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6231—Liquid Fertilizers

Liquid fertilizer formulators, distributors and dealers, as well as suppliers, will find a new booklet, "Preparation of Liquid Fertilizers," prepared by the Victor Chemical Works of interest. In eight pages the booklet describes the preparation of solutions, the batch procedure, and a chart showing the proportions of chemicals used to prepare liquid fertilizers to various strengths. The booklet also lists in detail the equipment recommended for a plant capable of producing five to 10 tons an hour of liquid fertilizer, tells the cost, and gives a flow diagram of a plant for the preparation of liquid fertilizers. The booklet may be obtained by checking No. 6231 on the coupon and mailing it.

No. 6237—Space Fumigant

A new space fumigant, "Bromotox," has been introduced by American Potash & Chemical Corp. The new product is a mixture of ethylene dibromide and methyl bromide, both of which have been used in the past to fumigate storage houses. Control of pests in grain, flour, rice, cheese and dried fruits is claimed for the product. More complete details will be sent if you will check No. 6237 on the coupon, clip and mail it.

No. 6235—Weed Control Guide

The Cooperative G.L.F. Exchange, Inc., has issued its chemical Weed Control Guide for 1955. Included in the 56-page booklet are chemical weed controls for the dairyman, cash crop and vegetable grower, farm home and fruit grower, based on the most recent recommended practices. The guide also suggests control measures which may be used on a trial basis only. Specific controls of problem weeds in field and garden crops are given. Aquatic weed control, soil sterilization and instructions in the use of weed killers and equipment are also included. To obtain a copy check No. 6235 on the coupon and drop it in the mail.

No. 6232—Pump

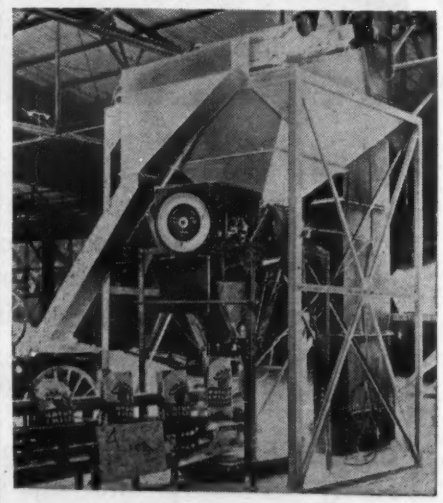
Hypro Engineering, Inc., is manufacturing a sprayer pump, called model 150, designed for such agricultural applications as high volume spraying and rapid transfer of liquid fertilizer. Capacity of the pump is over 30 gal. per minute at tractor power take-off speed (500 r.p.m.) and it has a flow rate of over 65 gal. per minute at its maximum recommended speed of 1,100 r.p.m. Highest suggested pressure limit is 150 lb. per square inch. Case and rotor of the pump are available in cast iron or a nickel-iron alloy. Rollers are of resilient nylon for positive liquid displacement. The pump is self-priming and is equipped with permanently lubricated ball bearings. Check No. 6232 on the coupon, mail it and more complete details will be sent to you.

Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted here to help keep retail dealers on rotational circulation informed of new industry products, literature and services.

No. 5099—Bagging Machine

Union Bag & Paper Corp., sales agent for Inglett & Corley's new I & C bagger (model UB-101) has announced that the machine is ready for distribution. The machine works in conjunction with a moving conveyor and sewing head. The weighing and filling cycle is automatic. A



starter button automatically permits delivery of the pre-weighed material through the machine's bag chute in an endless series. The filled weight drops each of the open mouth multiwall bags onto a moving conveyor belt which leads them through the sewing head. A dial type scale is double-faced so that both the closing and filling operators can see it. This model will weigh units from 25 to 200 lb. A system of switches within reach of the bagging operator enables him to change weight units immediately by operating the switch covering the desired unit. To secure more complete details check No. 5099 on the coupon and drop it in the mail.

No. 6227—Weed Killer

The Pacific Coast Borax Co. has introduced UREABOR, a new weed and grass killer developed specifically for industry. The product, a complex of sodium borates and 3-p-chlorophenyl 1-1, dimethylurea, has been extensively tested throughout the U.S., a company announcement says. No mixing or spraying equipment is required; it is applied dry just as it comes from 50 lb. multi-wall paper sacks. The product will be marketed by the company's Agricultural Sales Division. To secure more complete details check No. 6227 on the coupon and mail it.

No. 5058—Tractor Shovel

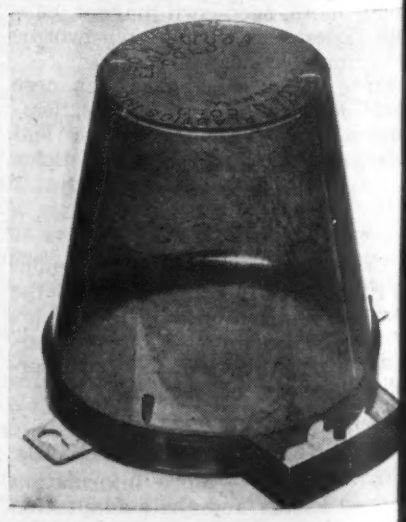
The Frank G. Hough Co. announces production of an improved Payloader tractor-shovel with bucket capacity of 1 cu. yd. payload and ¾ cu. yd. struck load. Designated as the model HFC, it is a rear-wheel drive model and features a combination of special new transmission, plus torque-converter drive. The torque-converter is of the self-cooled, 3-element type which automatically multiplies torque output of the engine in direct proportion to the load requirements. The transmission is of full-reversing type, giving four speeds forward and four reverse up to 28 mph. To secure more information check No. 5058 on the coupon and drop it in the mail. pon and mail it.

No. 6225—Bag Product

Arkell & Smiths is introducing a new moisture-barrier sheet, Lamo-Pak, to industries whose packaged products are affected negatively by changes in moisture content. The laminate is sandwiched between two sheets of light weight kraft and is particularly adaptable for packaging products whose moisture content must be retained and for hygroscopic materials, company spokesmen said. Other features claimed are: no odor, less stiffness, and will not cause sewing needles to gum. Samples of the new Lamo-Pak moisture-barrier sheet may be obtained by checking No. 6225 on the coupon and mailing it.

No. 5111—Bait, Dispenser

A new liquid bait for rodents and a bait dispenser now are being marketed by Donco, Inc., manufacturers of insecticides and rodenticides. Donco's water soluble rat and mouse killer, containing Pivalyn, is claimed



to be a tasty solution to rodents that is much more acceptable than plain water. One 1½ oz. package is mixed

Send me information on the items marked:

- ☐ No. 5058—Tractor Shovel
- ☐ No. 5099—Bag Machine
- ☐ No. 5111—Bait Dispenser
- ☐ No. 5124—Film
- ☐ No. 6207—Film
- ☐ No. 6223—Vermiculite
- ☐ No. 6224—Tomato Product
- ☐ No. 6225—Bag Product
- ☐ No. 6226—Seed Protectant
- ☐ No. 6227—Weed Killer
- ☐ No. 6228—Bag Machine
- ☐ No. 6229—Fly Killer
- ☐ No. 6230—Weevil Folder
- ☐ No. 6231—Liquid Fertilizer
- ☐ No. 6232—Pump
- ☐ No. 6235—Weed Guide
- ☐ No. 6237—Space Fumigant

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with a quart of water and poured into the liquid bait dispenser (see photo). Made of Styron, the dispenser is 3¼ in. high with a drinking trough 2¼ in. by ¾ in. This small evaporation area assures long term effectiveness, Donco indicates, without frequent fillings. To purchase a supply or for further information check No. 6111 on the coupon and mail it to this newspaper.

No. 6224—Tomato Product

Science Products Co. is now manufacturing its product, Blossom-Set, in aerosol bomb packing. It will continue to be available in bottles, company officials said. The product, according to a company announcement, is a tomato hormone which "makes tomato flowers set fruit even when cold nights or hot, dry weather prevails." The aerosol can is a 12-oz. size which contains a season's supply for about 100 tomato plants. Jobbers, wholesalers and dealers may check No. 6224 on the coupon, clip and mail it to this newspaper to obtain complete information about wholesale and retail prices and merchandising information.

No. 6223—Vermiculite

Over 40 industrial applications of vermiculite are listed in the 1955 revision of a data book on the mineral's chemical and physical properties announced by the Zonolite Co. The book has been brought up to date to familiarize researchers with latest research findings and practical uses of vermiculite. A selected bibliography is included for the first time, along with a list of vermiculite publications. Copies of the 16-page data book are available by checking No. 6223 on the coupon and dropping it in the mail.

CONTROL SOIL PESTS . . . INCREASE YIELDS

Powco Brand 20% Aldrin Granular Concentrate and 2 lb. Aldrin Emulsion Concentrate:

1. Protect germination. 2. Are safe on seed and plants. 3. Provide early stands. 4. Reduce harvesting costs. 5. Provide better quality crops. 6. Are not absorbed by or translocated in plants. 7. Give no off-flavor. 8. Are chemically stable.

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LOOK TO POWELL . . . FOR CONSISTENT TROUBLE-FREE QUALITY

No. 5124—Seed Treating Film

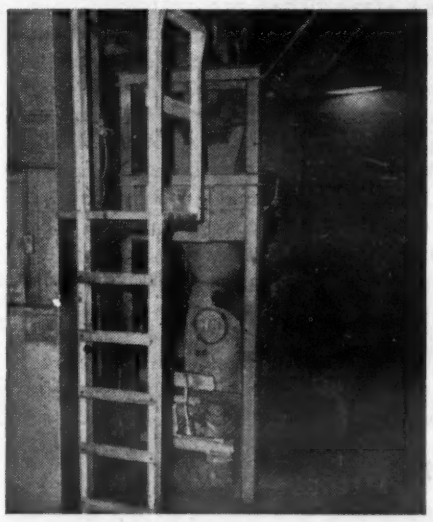
Panogen, Inc., has available a film on seed treating for showing by dealers or agricultural workers to farm groups. The film is entitled "Red Seed." To secure more information about the film check No. 5124 on the coupon and drop it in the mail.

No. 6207—Film

How once-wasted smoke from coke ovens is now converted into a wealth of basic chemicals used in the manufacture of fertilizers and countless other articles is the subject of a new motion picture, "Waiting Harvest," just released by the United States Steel Corp. "Waiting Harvest" traces the development of coke-making operations from the early industrial era when black smoke from beehive coke ovens was cast off into the atmosphere to modern coke ovens which channel it into processing units where the important chemical components are extracted. Prints of this 23-min. motion picture are available to service clubs, churches, civic, fraternal and other associations. It can be booked on a free loan basis by writing to the Motion Picture and Visual Aids Section, Advertising Division, United States Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.

No. 6228—Bag Filling Machine

The Kraft Bag Corp. is now marketing an automatic open mouth filling machine that is said to combine high speed and accuracy in operation with low cost of installation and maintenance. The machine is capable of 22 to 24 one hundred pound charges a minute, with one man hanging bags, using standard size and standard type open mouth bags. The company states that "Because it is pace-setting, the machine requires no head of material to maintain accuracy. It functions like other machines of this type, except that exclusive controls help to maintain unusual



accuracy at high speeds. The machine can handle all weights from 25 lb. to 200 lb., with an average variance of not more than 8 oz. plus or minus under ordinary production conditions during a full day's operation." To secure more complete details check No. 6228 on the coupon and mail it.

No. 6229—Fly Killer

A new fly bait that is said to kill up to two million flies per pound is now being marketed nationally by the Pittsburgh Coke & Chemical Co. The firm reports that at a midwestern university a small amount of Dipterex-199 was placed in a test chamber about the size of a large living room. Two thousand flies were released in the chamber. One hour later, 94% of the flies were dead, and at the end of eight hours, a 100% kill was recorded, according to the company. Another group of researchers tested the product at a large southwestern farm. Dipterex-199 was applied to surfaces in feed mixing and storage rooms and on feed troughs and pens. The official report of the research team contained the following statement: "The speed and completeness of fly control were sensational." Flies feeding on the bait lost their ability to fly in 60 to 140 seconds. They accumulated in piles up to one-half inch deep in 48 hours. One month after application, flies were still being killed by the original treatment, the firm reports. Dealers are being backed by the most extensive advertising and merchandising

ENOUGH TO KILL 2,000,000 FLIES!
Pittsburgh
DIPTEREX-199
THE AMAZING NEW FLY-KILLER BAIT!
Easy to Use! Economical! Won't Stain! No Odor!
ALSO AVAILABLE IN ECONOMICAL 10 POUND CONTAINERS

program ever initiated by the company for a single product. Large advertisements will be featured in national dairy and poultry magazines and a concentrated schedule of announcements will be carried on farm programs on over a dozen major clear channel radio stations. Television spots will be used in selected areas. At the dealer level, Dipterex-199 will be promoted by silver, red and blue display cartons, and by wall posters, window streamers and direct mail pieces. For more details check No. 6229 on the coupon and drop it in the mail.

No. 6226—Seed Protectant

A new insecticide-fungicide seed protectant has been developed by the Du Pont Company. Its trade name is "Delsan" AD seed protectant and contains "Arasan" seed disinfectant and dieldrin insecticide. The trademark, "Delsan," identifies the product as a Du Pont insecticide-fungicide combination, while the letters AD identify the specific formulation. The active ingredient in "Arasan" is thiram. The new material is recommended for treatment of beans, including limas; seed corn (field and sweet); and pea seed. The seed protectant may be applied as a slurry with a standard slurry treater, or the slurry may be mixed with the seed in a barrel treater or on a floor. The material adheres to the seed after treatment and does not tend to "dust off," it is claimed. The material is applied at the rate of 1¼ oz. per bushel of field corn seed, and 1¾ oz. per bushel of sweet corn, bean, or pea seed. To secure more information check No. 6226 on the coupon and mail it.

No. 6230—Alfalfa Weevil Folder

A new, colorful 6-page folder on the control of alfalfa weevils with Heptachlor is being made available by the Velsicol Corp. A company announcement states that, "This handy, pocket size folder is crammed with information on how to stop alfalfa weevil infestations before they start; how to get better crops; and how to protect helpful parasites." Specific suggestions as to methods and rates of Heptachlor formulations are listed in brief steps. The booklet on alfalfa weevils and other crop insects will be sent without charge. Merely check No. 6230 on the coupon and mail it to this newspaper.

BUG OF THE WEEK

Mr. Dealer--Cut out this page for your bulletin board

Gypsy Moth

How to Identify

Gypsy moth larvae usually appear about the first of May, after having passed the winter in the egg stage. They are restricted, geographically, to the New England states and eastern New York State. By the middle of June, these larvae are about two inches in length and these young caterpillars eat voraciously. They have several pairs of blue and red dots on their backs. Late in June, or early in July, they become more mature and begin to seek shady places (usually on trees or rocks) in which to pupate and transform into moths. Upon emergence late in July, the male moths are brown with strong wings for long flight, but the females are lighter in color and have heavy bodies which prevent them from making sustained flights as the males are able to do.

Habits of the Gypsy Moth

As mentioned above, male moths are able to fly about, which they do mostly in the daytime. Since the female moth cannot fly, other than to flutter around near the ground, she lays her eggs close to the place where she, herself, became a moth. Eggs are laid in clusters of 400 or more, which are covered with brownish hairs. When laid in freight cars, trucks or other objects which are shipped or moved to new locations, the eggs are thus introduced into areas where the pest has not been known before.

Damage Done by Gypsy Moth

This insect has the dubious honor of being the foremost destroyer of shade trees, deciduous and evergreen. The caterpillars, or larvae, of the gypsy moth eat the leaves and the defoliation retards growth and often kills the trees. During May and June each year in New England, valuable orchard trees and many others are stripped of their leaves. Garden plants are also attacked and altogether, several hundreds of species of plants are regarded as susceptible to the bug's appetite.

Control of Gypsy Moth

Since this pest attacks largely in forested areas over a wide territory, the most satisfactory method of control has been via airplane application of pesticidal chemicals. This may be done shortly before or after the eggs hatch. Ground sprayers are effective along highways or in residential sections. Knapsack sprayers may be used for treating low growth along stone walls and fences. Egg masses may be killed in the winter and in the spring, when larvae are crawling, bands of chemicals around the trunks prevent the larvae from climbing up. Use of DDT with fuel oil or kerosene has proved effective when applied from plane. Used at the rate of ½ lb. to 1 lb. DDT in 1 to 1 2/3 gal. fuel oil or kerosene, this type of application has been found particularly effective.

Picture of gypsy moth furnished Croplife through courtesy of United States Department of Agriculture

Previous "Bug of the Week" features are being reprinted in attractive 24-page booklet, priced at 25¢ single copies; reduced rates in quantities. Write Croplife Reprint Dept., Box 67, Minneapolis 1, Minn.

Spring Work Begins in Mid-South After Cold, Rain

MEMPHIS — Spring plowing has been resumed after Mid-South farmlands thawed and dried out after two weeks of severe cold and rain.

Extension officials in Arkansas, Mississippi and Tennessee in their weekly farm survey said farmers in some areas expected to begin spring planting last week.

Arkansas farmers were expected to begin planting cotton and other crops, although the Agricultural Extension Service said it probably will be past mid-April before planting gets underway on a large scale.

Much corn land has been prepared and planting has begun. Some early corn was up in southern counties a few weeks ago but was killed by the late March freezes. Severe damage to lespedeza was reported from the freezes also. While alfalfa suffered damage, it was reported making good recovery, with some first cuttings already done by farmers.

A lot of tomato plants in cold frames were hit by the March freezes, but reports of late are that transplanting to fields is underway in Bradley County, Ark., regardless. The tomato acreage, however, probably will be below planting intentions because of the loss of plants.

With the return of mild weather, farming activity in Mississippi took a sharp upswing, agricultural extension service specialists said.

Land breaking and placement of fertilizer for the 1955 cotton crop, and the planting of corn occupied many farmers.

In the commercial truck crops growing areas of the state, tomatoes, eggplant, peppers and beans were being planted, reported Chesley Hines, Mississippi extension horticulturist.

K. H. Buckley, extension gardening specialist, reported stepped-up activity in home gardens as gardeners rushed to replant freeze-damaged crops.

W. R. Thompson, extension pasture specialist, estimated 30 to 60% of the small grain crop was lost to the freeze. However, he advised farmers to take a "wait and see" attitude before plowing up any of the cereal plants.

"Anything that will make grain or hay should be left, as it is too early to plant sorghum millet or sudan," he said.

Rains continue to plague West Tennessee farmers who are behind schedule with spring plowing and planting, Judd Brooks, West Tennessee district agent, said at Jackson.

"Grazing crops, badly depleted by two years of summer drouth, were hit once more by the unseasonable cold weather of two weeks ago and those crops which were not killed will require a couple of weeks to recover from the effects of the cold spell.

"Seed has not been moving as fast as expected, probably due to the weather, but an upsurge of buying is expected soon," Mr. Brooks said.

"Farmers are buying strawberry plants in quantity. In some areas where they had bloomed early, the weather raised havoc and a short supply of berries can be expected.

"Peaches, plums, and pears were hard hit, but apples and cherries were not far enough along to feel the effects of frost."

When You Think of CHEMICALS Think of THOMPSON-HAYWARD
KANSAS CITY 8, MO.

Three Field Days Set in California

SAN FRANCISCO—Three agricultural field days have been scheduled to take place in 3 California cities.

April 29 will be Imperial Valley Field Day to be held at Meloland for the purpose of discussing the new, white look in California Mariout barley, its fertilization and disease control problems. May 18, attention turns to Hopland for discussions on range improvement, tree and weed control by use of chemicals, and related matters.

Both events are sponsored by the University of California, the latter in conjunction with the Mendocino County Wool Growers Assn.

May 20 there will be an Agronomy Field Day on the Davis campus of the University itself. Primarily of interest to alfalfa growers, the program for the day includes discussions of fertilization and pest control, particularly the current battle against the Khapra beetle on stored grain.

Heptachlor, Lindane Effective Against Wireworm, USDA Says

WASHINGTON — Heptachlor and lindane insecticides are proving effective for protection of newly-set tobacco plants against the tobacco wireworm, report entomologists of the U.S. Department of Agriculture. Small amounts of the insecticides are added to the water used in transplanting young tobacco from starting bed to field.

During the past two years, tests of several organic chemicals at Florence, S.C., have shown heptachlor and lindane to be as toxic to wireworms as chlordane, which was recommended in 1948, USDA reports. This research has been carried on cooperatively by USDA's Agricultural Research Service and the South Carolina Agricultural Experiment Station.

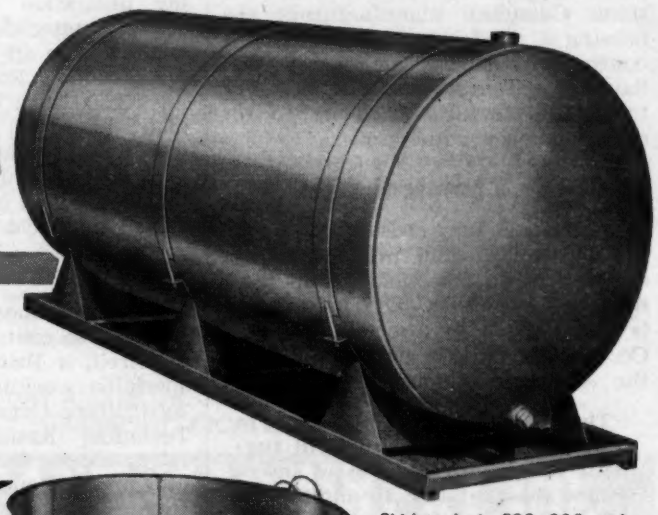
For control of wireworms, USDA reports that effective dosages for each 50 gal. transplant water used are:

(1) Eight oz. 40- or 50% chlordane wettable powder; (2) one fourth oz. of 25% lindane wettable powder; (3) 4 oz. 25% heptachlor wettable powder; or (4) 2 fluid ounces of a liquid concentrate containing 5% of lindane.

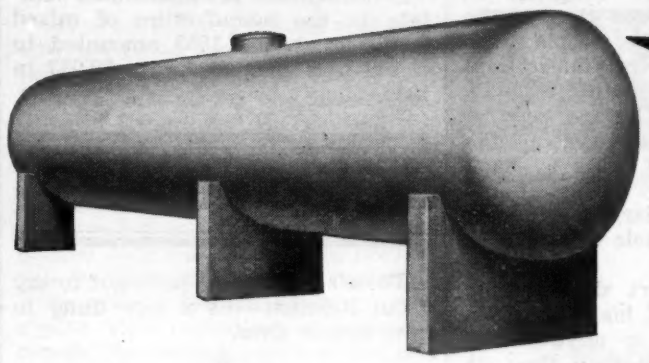
William C. Healey in Southwest Potash Post

CARLSBAD, N.M.—The Southwest Potash Corp. named William C. Healey to the position of industrial relations manager April 1, according to an announcement by Fred Stewart, vice president and general manager. Mr. Healey came here from the Esso Standard Oil Co. at Baltimore. However, he is well known in Carlsbad, having formerly served as industrial relations superintendent for the International Minerals and Chemical Corp.

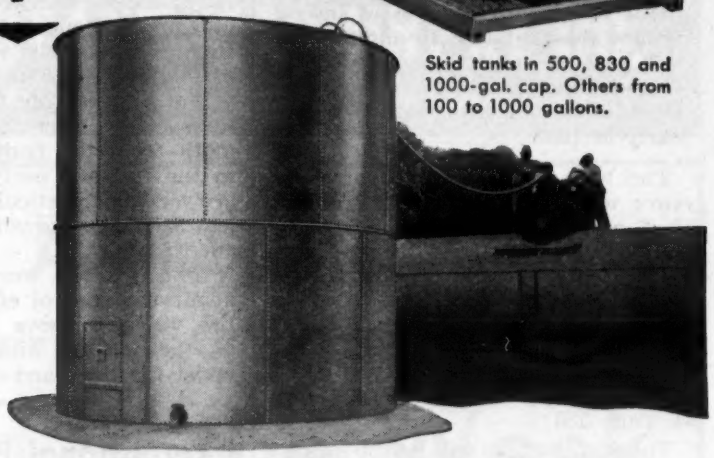
For farm storage...



For bulk storage...



Welded low-pressure tank for bulk storage. In 12,000 and 22,000-gallon capacities.



Skid tanks in 500, 830 and 1000-gal. cap. Others from 100 to 1000 gallons.

Bolted 22,000-gallon non-pressure tank for bulk storage.

Profit with BUTLER aluminum tanks for liquid nitrogen solutions

Cash in on the amazing upsurge in use of liquid nitrogen fertilizers. Butler now offers you two new types of special alloy non-corrosive aluminum bulk storage tanks for liquid nitrogen solutions.

One is a bolted vertical 22,000-gallon tank for non-pressure solutions. The welded tank—in 12,000 and 22,000-gallon capacities—is a horizontal bulk storage tank for low-pressure solutions, available to code specifications.

Smaller size horizontal aluminum tanks in 100, 270, 500, 830 and 1000-gallon capacities are also available. The 500, 830 and 1000-gallon tanks can be equipped with skids for on-farm storage or transporting solutions from bulk station to farm.

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WORLD REPORT

Industry News from Everywhere

By GEORGE E. SWARBRECK
Croplife Canadian and Overseas Editor

Representatives of the Republic of Korea have been trying to buy 200,000 tons fertilizer in Canada, using aid funds provided by the U.S. government. They were offered no more than 300 tons.

The buying agency is Cosmopolitan Trading Co. of Toronto operated by S. J. Bojicic and W. C. Suhr. Listed as needed by the Koreans are ammonium sulfate, calcium cyanamid and superphosphate. Though most of the aid funds are to be spent in the U.S. the agency states that it is empowered to buy elsewhere if supplies are unobtainable in the U.S. or if prices are too high.

Commenting upon the inability to obtain fertilizer needs in Canada, Mr. Suhr, himself a Korean, said "We realize, of course, that we were looking for fertilizers at the busy time as far as the domestic plants are concerned. But even so I think Canadian manufacturers are missing a good bet. This could be a continues business for Korea will have to feed its starved soil for years to get its fertility back up to required levels again."

Loan for Chemical Plant

The Export-Import Bank is to provide a loan of $1.5 million for the erection of an insecticide plant by a firm in Sao Paulo. The installation is being made by the W. R. Grace Co. of New York in partnership with the American Home Products Corp.

The projected plant, according to a statement by the bank, will augment Brazil's production of insecticides substantially. In addition, it will produce industrial solvents, detergents, caustic soda and chlorine. Operations are expected to begin early in 1957.

The loan is for a period of seven years with interest at the rate of 5½% a year.

CIL Plant

Construction of the new ammonia plant for Canadian Industries (1954) Ltd. at Millhaven, Ont., will start early this summer (Croplife March 21, page 18).

The plant, which will be the largest of its type in Canada, is expected to produce 66,000 tons ammonia a year. The cost has been estimated at upwards of $7 million. Part of the production will be used by CIL in its own extensive fertilizer business.

U.K. Sales

Sales and exports of fertilizers by the British trade did not keep pace with the more extensive development of the general chemical business in 1954, according to a review prepared in connection with the British Industries Fair to be held in London and Birmingham May 2-13.

Domestic sales were down, due to the end of boom conditions in the agricultural industry, while exports suffered from a cutback in the needs of Commonwealth buyers, a cutback sparked by the growth of home industries in the overseas markets and by the availability of cheaper supplies from other sources.

The misgivings felt four years ago about the shortage of sulfur have not been realized and British consumption is now higher than ever, the report states. Alternative processes of sulfur production have helped offset the general world scarcity.

New pyrites based plants are in operation and Imperial Chemical Industries, Ltd., is making greater use of anhydrite as a source of sulfur for sulfuric acid. Total production of this firm is now standing at 180,000 tons a year. Apart from the increasing utilization of inorganic sulfur bearing materials, sulfur is being extracted from oil refinery gases.

At Stanlow, Shell Chemcial is making 33,000 tons of acid in a contact plant based on refinery sulfur. At the Grangemouth refinery of the British Petroleum Co., about 5,000 tons sulfur will be extracted and converted into acid.

The Afghan Way

Sometimes modern methods are not required to control plant pests. C. S. Cotterell, a British plant protection specialist working for the Food and Agriculture Organization's Expanded Technical Assistance Program in Afghanistan, discovered that in the village of Rousa, the people were coping adequately with infestations of the small ermine moth.

The villagers, Mr. Cotterell reports, remove the eggs and larvae of the moth from the fruit trees by hand in the fall and early spring. If any grower has a particularly tough problem to handle the whole village turns out to help him.

If a grower won't do anything about the control of his pests, then the villagers move in anyway and do the job for him—then they sit under his trees and eat his fruit.

International Paper Opens Denver Office

NEW YORK—International Paper Co. has opened a new branch sales office in Denver, it was announced recently by F. Henry Savage, vice president and general sales manager. The new office, which is located at Room 908, Equitable Bldg., 17th and Stout Sts., Denver, will house representatives of three of the company's divisons.

Russell A. Gair, Jr., who has already located in Denver, will continue to represent the Bagpak Division, makers of multiwall shipping sacks. Bryan J. Smith will represent the Container Division, makers of corrugated shipping containers, and Edwin B. Williams will represent the Single Service Division.

The opening of this new office brings to fourteen the number of branch sales offices operated by International Paper Co. throughout the country. The others are located in Atlanta, Baltimore, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Milwaukee, Minneapolis, New Orleans, Philadelphia and Syracuse.

CLOVER APHIDS

EL PASO — The yellow clover aphid which made its appearance in local alfalfa fields last fall is still in plentiful supply. The insects are now rather widespread and are causing spot damage to many fields. Also early spring planted barley is being attacked.

Firm to Develop Guano Deposits In Arizona

MONTREAL — New Pacific Coal and Oils, Ltd., a Canadian company, announces that its wholly owned subsidiary, United States Guano Corp., is preparing to operate a deposit of organic nitrogen in the Grand Canyon of Arizona.

Making the announcement, F. E. Ruben, president of New Pacific, says that the deposit has been located in a series of caves. At least 250,000 tons are present, but the engineers believe that even more will be located as exploration proceeds. Mr. Ruben estimates the present price at $90@100, depending upon the nitrogen content, which is 12 to 14%.

Subject to engineering advice on the extent of the deposits plans call for the installation of mechanical equipment including an aerial tramway, the statement adds.

Ammonium Sulfate Sales in Canada Decline in 1954

WINNIPEG—Factory sales of ammonium sulfate by Canadian producers in 1954 amounted to 177,699 tons valued at $7,709,668 compared with 186,540 tons valued at $8,200,124 in 1953, according to a special compilation conducted by the Dominion Bureau of Statistics. Exports during the year amounted to 154,760 tons compared with 147,370 tons a year earlier while imports totaled 14,101 tons compared with 21,250.

Consumption of ammonium sulfate in the manufacture of mixed fertilizers during 1953 amounted to 41,758 tons compared with 30,937 in 1952.

Gloomicides

There's one thing you've got to say about inflation—it's a nice thing to have in your tires.

★

The undertaker was complaining about business. Suddenly his wife nudged him. "Sh-h-h-h-h, here comes a customer," she said. "Cheer up and look sad!"

★

Jimmy had returned from a party and his mother, knowing his weakness, asked: "Are you sure you didn't ask Mrs. Smith for a second piece of cake?"

"No, mother, I only asked for the recipe so you could make some like it and she gave me two more pieces!"

★

Word got around that a certain farmer's mule had kicked the farmer's mother-in-law to death.

A tremendous crowd, almost all men, turned up at the funeral. The clergyman commented, "This woman must have been mighty popular, judging from the number of people here at the funeral."

"They're not here for the funeral," said the farmer. "They're here to buy the mule."

★

A friend of mine has read all the books on how to deal with children. He thinks he's quite good at it. One of his techniques, borrowed from the experts, is the loaded question—one to which there is no negative answer. For example, he'd ask, "What do you want to do first, pick up your toys or hang up your clothes?"

But the five-year-old soon showed how well he had learned the trick. One day in the toy store he halted before a display, looked and demanded of his daddy, "Which one are you going to get me, the scooter or the wagon?"

Cost of Budworm Spraying Less Than $1 Million

MONTREAL — Forest Protection, Ltd., estimates that the cost of the campaign against the spruce budworm in New Brunswick during the 1955 spraying season will be less than $1 million. When operations first began the acreage cost was set at $3.30 but this figure was reduced to $1.40 in 1953 and to $1.10 last year.

The cost of the annual undertaking is shared three ways by the federal government, the provincial administration and a group of paper companies.

The New Brunswick government's forest and natural resources committee received a report from B. W. Flieger, manager of Forest Protection, in which it was stated that though the budworm epidemic is not yet over there is evidence suggesting that the peak has been passed. Mr. Flieger added that the 1954 operation was the best so far because costs were cut and no live forests were lost.

Present plans call for the aerial spraying of 1.1 million acres this year, Mr. Flieger revealed.

The government committee was concerned because of allegations that DDT in the spray was killing the aquatic insects upon which young salmon feed. It has been suggested that it might take some years to reach former levels of production because of the damage sustained.

The committee was told that no evidence yet exists that a permanent dent in fish populations occurs after forest spraying in a limited area. Conclusions to date were no more than estimates or opinions.

Dr. R. E. Balch, forest biology laboratory chief for the Canadian government at Fredericton, N.B., said that the effects of the spray, if any, on the salmon catch will not be reflected for four to six years.

The present budworm outbreak hit New Brunswick in 1948 spreading across 13,000 sq. mi., mostly in the north.

Feed Grain Acreages In Canada to Increase

TORONTO—There will be more of the major feed grains and less wheat grown in Canada in 1955, according to a survey made by the Dominion Bureau of Statistics.

Increased acreages will be devoted to oats, barley and flaxseed. Current price relationships, marketing quota arrangements in the prairie provinces and the high incidence of rust in some areas — especially Saskatchewan— may have influenced the intended shift. However, weather conditions at planting time may affect the intention figures.

This indicated acreages for the various grains for all of Canada for 1955, with the previous year's figures in brackets are spring wheat 22,954,200 acres (23,556,800); oats for grain 11,177,000 acres (10,160,600); barley 9,814,800 acres (7,855,900); spring rye 222,000 acres (178,000); flaxseed 1,665,000 (1,206,000).

The corresponding figures for the three prairie provinces are spring wheat 22,828,000 acres, (23,437,000); oats for grain 7,679,000 acres, (6,715,000); barley 9,524,000 acres, (7,568,000), spring rye 222,000 acres, (178,000); flaxseed 1,665,000 acres, (1,206,000).

ACTING MANAGER

GAYS MILLS, WIS.—Myron Johnson has been named acting manager of the Crawford Farm Supply Cooperative Feed Mill here.

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ED CONTROL DEMONSTRATED—Dr. Stephen Raleigh, Pennsylvania te University, stands at boundary line between rows of corn treated with izol (right) and untreated portion on left, overrun with quackgrass.

merican Chemical Paint Co. escribes Herbicide-Defoliant

MBLER, PA.—In announcing its herbicide and defoliant, "Amizol," erican Chemical Paint Co., Am-, Pa., has made known some of properties of this compound. It be available this year under an erimental label. The material was viously used in the manufacture photographic film.

ts makers state that the material, notriazole, appears to be effec- on a wide variety of weeds, rang- from quackgrass in corn to ada thistle in pastures.

Preliminary experiments indicate at the new product may be suc- ssful in controlling quackgrass which it will be applied this ar on a wide scale. It is expected be used also on nutgrass this ar in the South, the company ates. ACP also points out that e new material may be used as defoliant on cotton. Its action t only causes the leaves to drop, t discourages the growing of new es when cotton picking is de- ed.

Exhibiting a rather broad versa- y, the material is also useful as a sh killer, ACP declares. It has with success against ash, poison and certain oaks, the makers re- t.

One of the most important eco- ic weed pests against which Ami- has been effective, is Canada tle. This weed, recently ranked at top of the national list of weeds lawed by states as a "public my" is difficult to kill because of extensive root system.

A number of agronomists at col- es, universities and state agri- ltural experiment stations have ported their experiences with the oduct against a variety of weed sts. Dr. C. J. Willard, Ohio State iversity referred to the "rather ccessful use" of Amizol against nada thistle and Oliver C. Lee, rdue, reports on the chemical's tion on the same weed. The nts ranged from 3 to 15 in. high d rates of spray were 2, 4 and 8 an acre of active ingredient in gal. water per acre.

Severe chlorotic symptoms," Mr. said, "resulted from all treat- ts, which eventually destroyed growth with the exception of a plants on plots receiving the two- nd rate. Most new shoots arising n roots throughout the entire mer were chlorotic and did not ive.

The stand of thistles on all treated s on Oct. 8 was less than a frac- tion of 1% of that on check areas. The heavier applications, four and eight pounds, were slightly more effective than the two-pound rate. Excavations made on Oct. 8 indicated that portions of the roots had been destroyed to a depth of 12 inches or more. Some sections were destroyed; others were discolored, indicating that they may not survive."

Given preliminary testing with several new herbicides for the control of Canada thistle by A. L. Bakke and E. P. Sylwester for the Iowa Agricultural Experiment Station and Extension Service, Amizol "showed good results," they reported.

Because of the nature of this perennial weed, these results must be considered as preliminary. Final reading will be taken this summer regarding those plants which send up new shoots. But, regardless of summer's results, the researchers point out, this chemical gives excellent top growth control and translocates into the rhizomes of the unwanted plant. Regrowth during the summer has been chlorotic, or sickly, and most treated plants have died, ACP says.

These preliminary results are subject to confirmation by final reading in 1955, but the tests already show that this chemical translocates and affects thistle more than any other compound yet known, the makers declare.

Another tenacious weed pest, quackgrass, has indicated its susceptibility to Amizol in tests conducted by Dr. Stephen Raleigh, weed specialist at the Pennsylvania State College. His work, carried out in Pennsylvania cornfields, indicated that application should be made on the quackgrass sod in the spring, 10 or 20 days before planting corn.

Applied at the rate of 12-lb. an acre, Amizol killed about 99% of the quackgrass under all conditions. At a six-pound rate, it killed about 98% when disked under good conditions and about 95% under wet conditions.

Thomas K. Pavlychenko, research director in Canada for ACP, was able to get, under best conditions, a complete top kill of quackgrass and its regrowth. In one Canadian experiment Amizol was reported to be active for 29 days after treatment. It killed the top growth and also prevented regrowth for 29 days.

Nutgrass is a pest on almost every farm in the Carolinas, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas and

(Continued on page 21)

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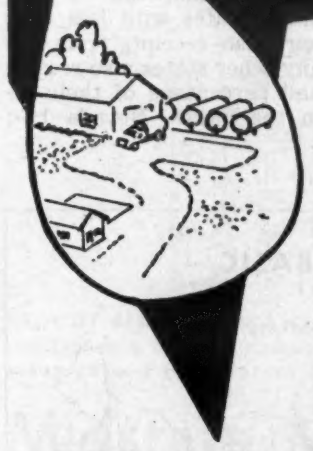

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Alfalfa Weevil	Northern Corn Rootworm
Armyworm	Onion Thrip
Boll Weevil	Plum Curculio
Chinch Bug	Potato Leafhopper
Cotton Bollworm	Seed Corn Maggot
Cutworm	Sweetclover Weevil
Grasshopper	Tarnished Plant Bug
Imported Fire Ant	Tobacco Hornworm
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USDA Maps Show Farm Income, Price Support Data

WASHINGTON — Several maps showing state-by-state distribution of farm income from price-supported and non-supported farm commodities have been released by the U.S. Department of Agriculture.

Four of the maps, reproduced here, show in graphic form the impact of price supports on farm commodities.

Map No. 1 concerns cash receipts from basic farm commodities. This shows by states the cash receipts for all six basic crops now supported at 90% of parity as a percentage of total cash farm receipts. Income from these basic commodities is concentrated in nine southern states, three southwestern states (Texas, Oklahoma, and Arizona), two northern states (North Dakota and Montana), and Kansas in the midwest.

There are 4 states with less than 1% of their cash receipts from the basics. Many other states also receive only a small percentage of their income from the basics. Nevada 1%; New York, Wisconsin, and New Jersey 2%; Massachusetts and West Virginia 4%; Florida 5%; Pennsylvania 6%; Utah and Delaware 7%; Wyoming 8%; Minnesota 11%; Iowa and Michigan 13%.

A variation of map No. 1, showing cash receipts from basic farm commodities, excluding tobacco, indicates that without tobacco 10 states get 40% or more of their cash receipts from the five other basic commodities. Kentucky, for example, gets 4% of cash farm receipts from basic farm commodities, other than tobacco; Virginia 10%; West Virginia 2%; North Carolina 15%; Indiana 16%, and Ohio 17%.

Map No. 2 shows cash receipts from non-supported commodities. This shows that from coast to coast a large majority of states receive more than half their cash farm receipts from non-supported commodities.

Map No. 3 shows cash receipts from meat animals, and dairy products and poultry products for which price-supported feeds are an element of cost. Fifty-five percent of U.S. cash farm income is from livestock and livestock products.

Stability of feed supplies and prices at reasonable levels are advantageous to this area. Feed price supports at a high fixed level would add to production costs.

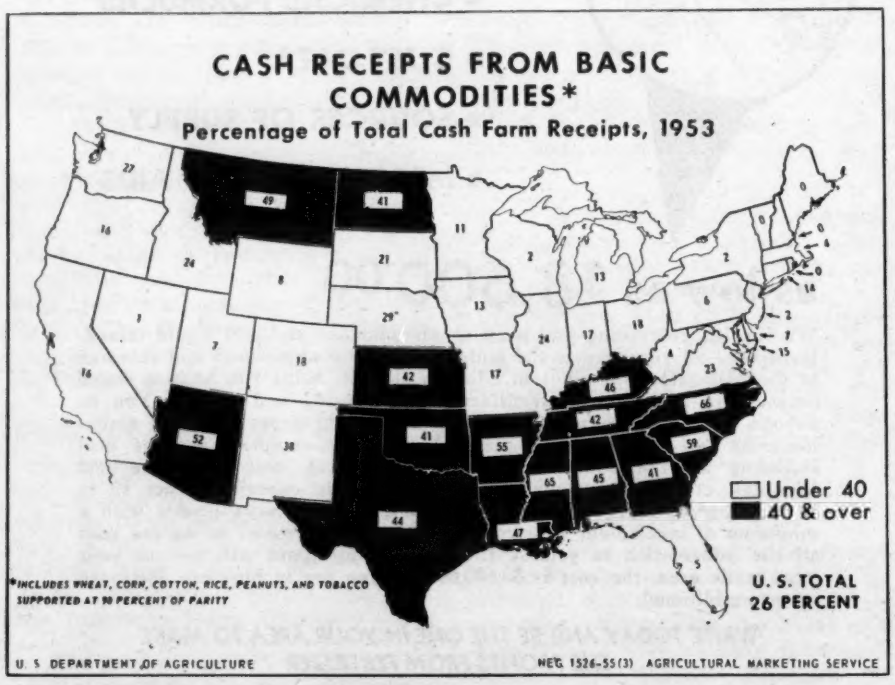
Map No. 4 points out cash receipts from non-supported commodities and dairy products. All except nine states receive more than 50% of their cash receipts from non-supported commodities and dairy products.

Price support at 90% of parity was provided, as required by law, on the 1954 crops of basic commodities: wheat, corn, cotton, rice, peanuts, and tobacco. These commodities bring in 26% of the U.S. cash farm income.

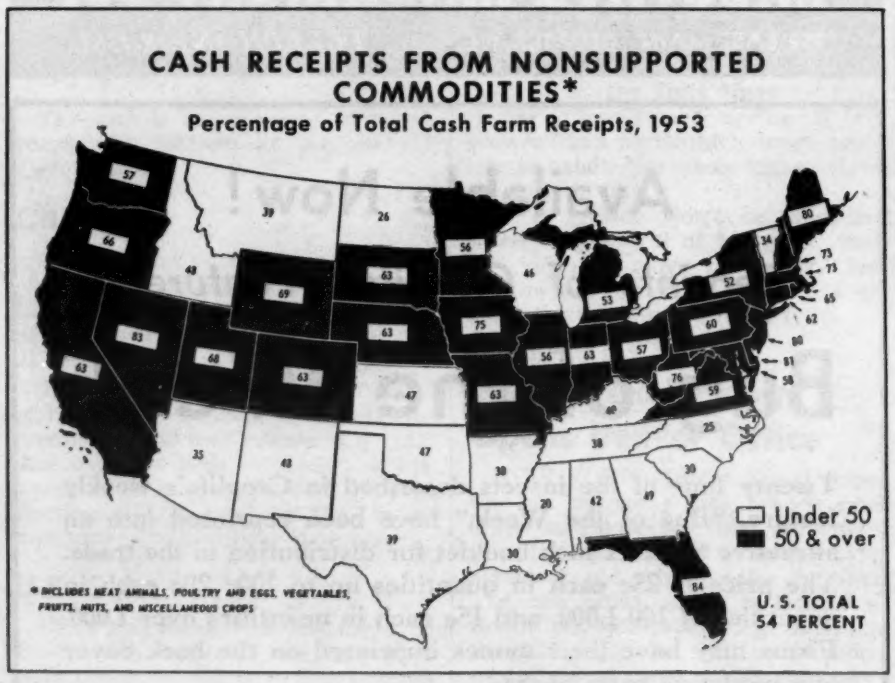
Price support is being provided on the following nonbasic commodities: Dairy products, wool, mohair, honey, tung nuts, barley, oats, rye, sorghum grain, flaxseed, soybeans, dry beans, cottonseed, and crude pine gum. For some of these commodities price support is mandatory and for some it is permissive. Supports in general are on a flexible basis. Supports in force in 1954 ranged from 60 to 90% of parity. These nonbasic supported commodities bring in 20% of U.S. cash farm income.

Non-supported commodities bring in 54% of U.S. cash farm income.

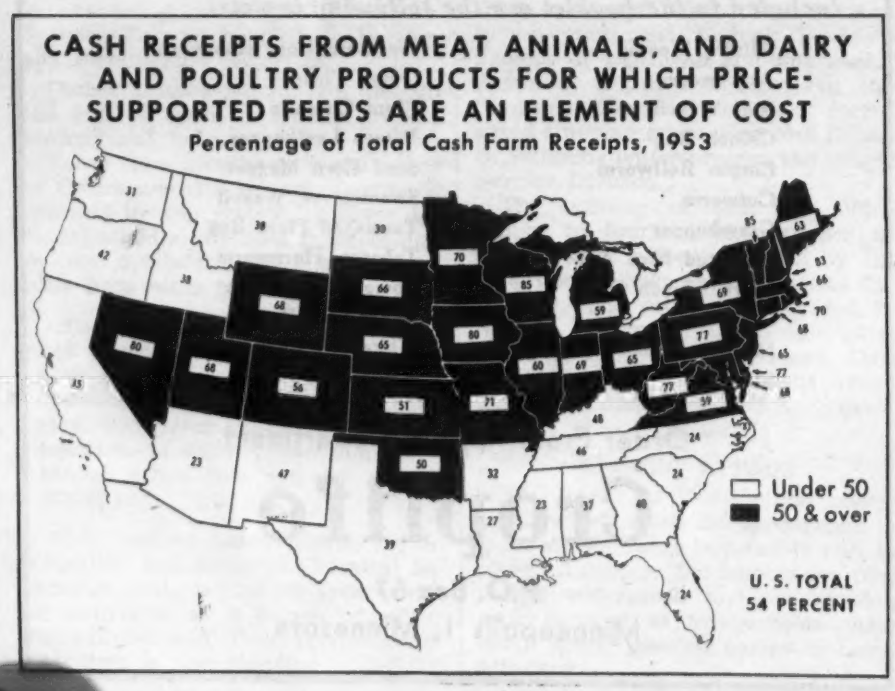
No. 1


CASH RECEIPTS FROM BASIC COMMODITIES*
Percentage of Total Cash Farm Receipts, 1953
Under 40
40 & over
U. S. TOTAL 26 PERCENT
*INCLUDES WHEAT, CORN, COTTON, RICE, PEANUTS, AND TOBACCO SUPPORTED AT 90 PERCENT OF PARITY
U. S. DEPARTMENT OF AGRICULTURE
NEG. 1526-55(3) AGRICULTURAL MARKETING SERVICE

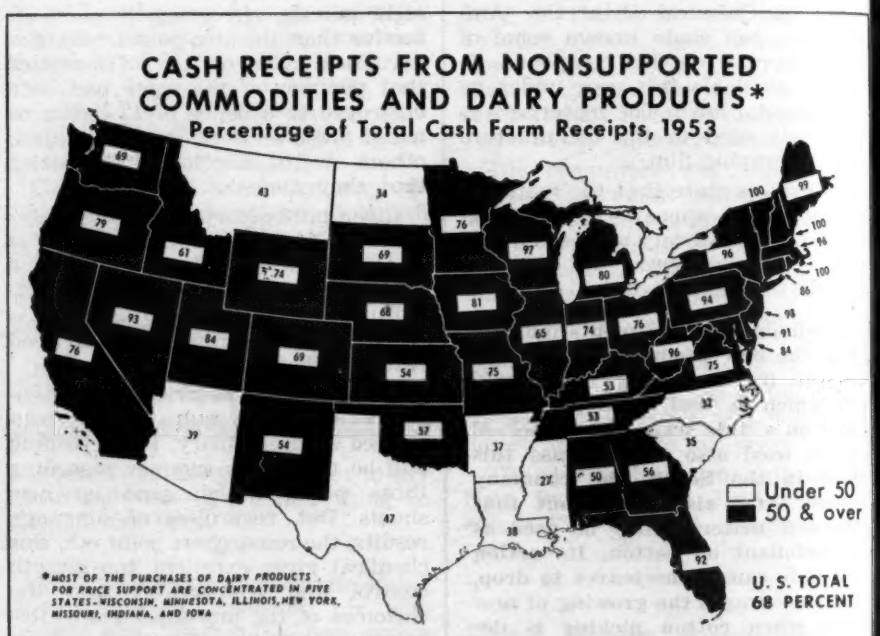
No. 2


CASH RECEIPTS FROM NONSUPPORTED COMMODITIES*
Percentage of Total Cash Farm Receipts, 1953
Under 50
50 & over
U. S. TOTAL 54 PERCENT
* INCLUDES MEAT ANIMALS, POULTRY AND EGGS, VEGETABLES, FRUITS, NUTS, AND MISCELLANEOUS CROPS

No. 3


CASH RECEIPTS FROM MEAT ANIMALS, AND DAIRY AND POULTRY PRODUCTS FOR WHICH PRICE-SUPPORTED FEEDS ARE AN ELEMENT OF COST
Percentage of Total Cash Farm Receipts, 1953
Under 50
50 & over
U. S. TOTAL 54 PERCENT

No. 4


CASH RECEIPTS FROM NONSUPPORTED COMMODITIES AND DAIRY PRODUCTS*
Percentage of Total Cash Farm Receipts, 1953
Under 50
50 & over
U. S. TOTAL 68 PERCENT
*MOST OF THE PURCHASES OF DAIRY PRODUCTS FOR PRICE SUPPORT ARE CONCENTRATED IN FIVE STATES - WISCONSIN, MINNESOTA, ILLINOIS, NEW YORK, MISSOURI, INDIANA, AND IOWA

WHITE-FRINGED BEETLE

(Continued from page 1)

las, Escambia, Geneva, Houston, Jefferson, Lowndes, Marengo, Mobile, Monroe, Montgomery and Wilcox counties.

Florida: Escambia, Holmes, Jackson, Okaloosa, Santa Rosa, and Walton counties.

Georgia: Baldwin, Ben Hill, Berrien, Bibb, Bleckley, Bulloch, Candler, Coffee, Crawford, Crisp, Dodge, Emanuel, Fulton, Greene, Houston, Irwin, Jasper, Jefferson, Johnson, Laurens, Macon, Monroe, Montgomery, Newton, Peach, Putnam, Richmond, Screven, Sumter, Taylor, Toombs, Treutlem, Turner, Twiggs, Washington, Wheeler and Wilkinson counties.

Louisiana: East Baton Rouge, Iberia, Jefferson, Orleans, Plaquemines, Saint Bernard, Saint Tammany, Tangipahoa and Washington parishes.

Mississippi: Attala, Clarke, Covington, Forrest, George, Greene, Hancock, Harrison, Hinds, Jackson, Jasper, Jefferson Davis, Jones, Lamar, Lauderdale, Lawrence, Leake, Marion, Pearl River, Perry, Rankin, Simpson, Stone, Warren and Wayne counties.

North Carolina: Anson, Brunswick, Cumberland, Duplin, Edgecombe, Harnett, Jones, Nash, New Hanover, Onslow, Pender, Union, Wake and Wayne counties.

South Carolina: Beaufort and Fairfield counties.

Tennessee: Hamilton, Hardeman, Shelby and Tipton counties.

Liquid Fertilizer Dealers Advised on Metering

BOSTON — John P. McBride, director of standards for the state, has told merchants handling liquid fertilizer that if this fertilizer is to be sold by the gallon, that is, so many gallons for so much money, it must be metered. He said a water meter would suffice.

The director said many fuel dealers were planning to enter the liquid fertilizer business this year, and he cautioned them not to meter liquid fertilizer through their present oil meters.

He announced that if dealers are merely selling the fertilizer on an application business, the state department of standards would not be involved, the Fertilizer Control Board at the University of Massachusetts having jurisdiction.

INSECT, PLANT DISEASE NOTES

(Continued from page 4)

wintering of both leaf rust and stem rust.

In surveys conducted between January 31 and February 12, leaf rust was widespread and stem rust was found on wheat near the Gulf coast and on oats in the San Antonio area.

At the middle of March, leaf rust was spreading fast but stem rust had evidently retreated south as far as an east-west line from College Station through Austin to Fredericksburg. That is to say, it was known to be present only in the southernmost third of the State.

Crown-rust and stem rust of oats were found as far north as Temple in the eastern central part of Texas. Oat fields near Houston had already been damaged by rust. Generally, there seems to have been more overwintering of the cereal rusts than for several years and the rust situation for both the wheat rusts and the oat rusts is considered to be potentially dangerous.

There is little knowledge, yet, of the races of wheat stem rust that are present in Texas but there is evidence of the presence of races 15B and 56.

"It is not possible, at the moment, to make any predictions as to future spread of rust. The only factor that is clear is that there is a considerable supply of spores of leaf rust and stem rust of wheat and crown rust and stem rust of oats in the rust overwintering area," the report said.

"There is now a distinct possibility that we may have another late spring in the Dakotas and Manitoba. This would be a factor favoring rust development in this area. It is therefore considered advisable to suggest to farmers in Manitoba and southeastern Saskatchewan that they grow as much rust resistant grain as possible.

"Apart from the growing of rust resistant varieties, early seeding and the use of phosphate fertilizer at rates locally recommended will tend to hasten maturity and thus afford some protection against rust."

HERBICIDE-DEFOLIANT

(Continued from page 19)

eastern Texas. Infestations range from small patches to several acres, and the economic loss is great.

Preliminary greenhouse tests by E. W. Hauser, U.S. Department of Agriculture, and J. T. Thompson, Georgia Experiment Station, Experiment, Ga., indicated that Amizol readily translocated throughout the tuber system of nutgrass when applied as a foliage application. Such applications to nutgrass exhibited translocation of Amizol to as far as the third nut on the chain. The ability of Amizol to translocate to the tuber system and affect the growth from the tubers shows promise for the control of this plant pest with this type of spray, ACP says.

Although Amizol appears promising for the control of nutgrass, further research is needed to determine effective timing of application, rates required and desirable cultural practices, it is indicated.

To determine the product's effectiveness in the control of woody plants, Amizol was screened against a variety including ash, red maple, several species of oak, and persimmon.

These plants and others were treated with varying rates of Amizol as a foliage spray in the summer of 1953 by William A. Meyers, a researcher for the firm. The plants most affected by rates of six pounds and above per 100 gal. water applied to run-off were poison ivy, white ash, black oak, scrub oak and hickory. Poison ivy reacted most rapidly to the treatments.

Other possible uses for Amizol, based on preliminary work, appear to include control of Johnson grass on ditch banks, Bermuda grass, hemp nettle, stickweed, bull mustard, giant foxtail, cattails, tulles, milkweed and wild buckwheat.

"Not all tests with Amizol have been successful," says Robert H. Beatty, ACP agricultural research director. "It won't be a cure-all. Our research department will not release the compound for unlimited sale until more data can be gathered under various soil, rainfall and growth patterns. With the splendid cooperation we have been receiving from the weed research workers in the Federal and State governments, we hope to expand our development program in 1955."

Scattering of Bugs Reported in Indiana

VINCENNES, IND. — Five peach trees jarred in an abandoned orchard near Hazelton, Ind., on April 12, yielded one stink bug and 13 plum curculio. The last previous jarring was made March 21. Protection for sucking bugs and curculio will be needed from now on.

Examination of codling moth larvae in overwintering cages on April 12 showed that pupation has just started at Vincennes.

Egg clusters of the red-banded leaf roller were readily found in one orchard that had a moderate infestation of this pest in it in 1954. Peak of spring brood egg laying likely occurred during the past few days. Infestations in most commercial orchards throughout southern Indiana are likely to be very light, owing to an extremely light carryover from 1954. Carryover north of Indianapolis was heavier.

Hatched forms of European red mites were taken on Red Delicious apples on April 12. Several mites appeared to be three days old.—D. W. Hamilton.

Cold Weather Retards Weevils

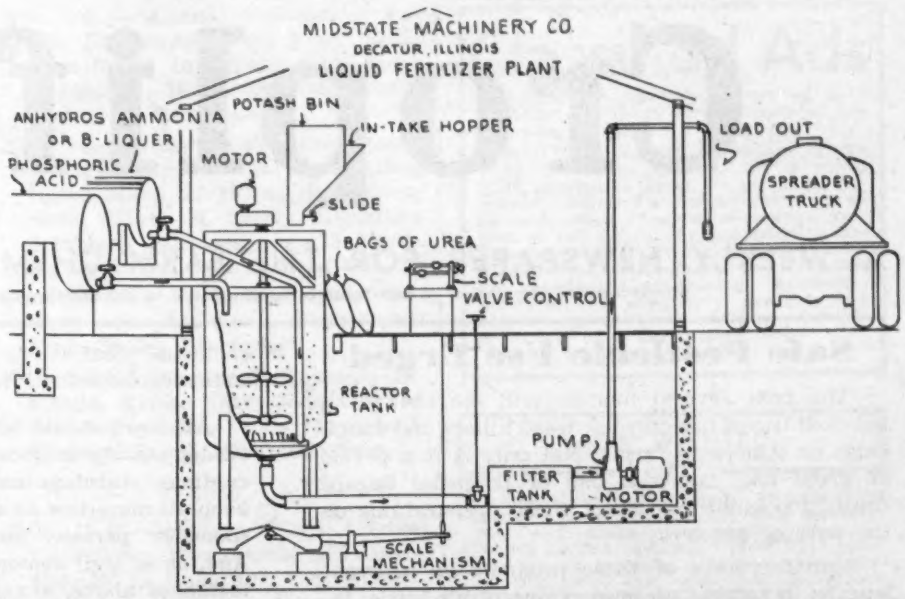
NEWARK, DEL. — Alfalfa weevil development in Delaware has been retarded by the recent cool weather, but warnings were being forwarded to farmers in the state that European corn borer pupation in Sussex County is 50% compared to only 15% in 1954. Growers were urged to plow under old stocks.—L. A. Stearns and J. W. Heuberger.

J. F. McLaurin Named Representative For Olin Mathieson

BALTIMORE — J. F. McLaurin, past president of the National Cotton Ginners Assn., has been appointed sales representative for finished insecticide products in South Carolina for Olin Mathieson Chemical Corp. In addition, he will serve as a consultant for the company in cotton and tobacco areas throughout the U.S.

South Carolina Sales

CLEMSON, S.C.—March fertilizer sales in South Carolina totaled 327,676 tons, according to the state Department of Fertilizer Inspection and Analysis. This total included 253,638 tons mixed goods. The total reported by registrants from July 1, 1954, to March 31, 1955, is 654,440 tons, a decrease of about 15% from 775,650 tons for a corresponding period a year earlier.



LIQUID MIXING PLANT — Shown above is a schematic drawing which illustrates a typical installation of a liquid mixed fertilizer "package plant," being offered by Midstate Machinery Co.

Midstate Machinery Develops Liquid Fertilizer 'Package Plant'

DECATUR, ILL. — Midstate Machinery Co. of Decatur has worked out a plan whereby the equipment for manufacturing liquid fertilizer products may be obtained in a single "package" deal.

The plan resulted from a year and a half of designing, engineering and experimenting at Midstate's pilot plant at Clinton, Ill., where liquid mixed fertilizers have been manufactured for the past two seasons. The company says that all chemical formulae, cost data on manufacturing, suggested selling prices and merchandising aids have been developed at this plant.

Field research by Midstate engineers indicated that the acid-neutralization method of producing liquid mixed fertilizers was faster and less expensive to operate. With this information as a background, the engineers developed "package plants" with capacities from 10 to 50 tons per hour.

The company states that a manufacturer with a 15-ton-per-hour plant could make enough liquid mixed fertilizer to sell his local trade area.

The 15 ton per hour "package plant" consists of complete schooling at the Midstate pilot plant, all chemical formulae, cost data on manufacturing, suggested selling prices, merchandising aids, a 5,000 gal. phosphoric acid tank complete with line to reactor tank and necessary valves, ammonia nitrogen line and valves to reactor tank, 5 ton or 1,000 gal. stainless steel reactor tank complete with mixing unit, tank scale, loading hopper for potash, line and valve from reactor tank to filter tank, one filter tank, line from filter tank to pump, 2½-in. fertilizer pump complete with motor and coupling mounted on stand, 2-in. line from pump to truck load-out line and one load-out line complete with strainer. Illustrated above is a schematic sales drawing. Blueprints and detailed instructions for construction are included.

The company says that the plant can be erected in a "do it yourself" manner, with all components shipped assembled and ready for installation.

MISSOURI SURVEYS

(Continued from page 4)

certain sections of the state, is able to keep a supply of insecticides available for farmer use.

"Even though the demand for insecticides was unusually heavy last season, no critical shortages developed at any time during the year.

"This is one of the few times when during a year of heavy usage, such shortages failed to develop," the entomologist observes.

In cooperation with several insecticide manufacturers, the Extension Service put on insect control demonstrations in about one fourth of the counties of the state last season. These demonstrations were planned to show farm people the effectiveness of different insecticides in controlling several of the major insect pests, and to show the increases that could be expected to result from using good insect control practices.

"Although the increase resulting from the proper use of insect control or prevention measures is quite sizable, it could be several times larger if all farmers used the right control procedure at the right time," Mr. Kyd states. "It is towards helping all farm people in Missouri get this job done that the Extension Entomology Project directs its efforts during 1955."

Insect notes carried in Croplife each week include those from Mr. Kyd and Mr. Thomas in Missouri and their counterparts in many other states across the nation. Prompt publication of this information is carried out by Croplife as a service to the entire trade.

Fertilizer Sales in Maryland Reach New Record High in 1954

COLLEGE PARK, MD.—Fertilizer sales in Maryland reached a new record of 311,232 tons in 1954, according to a report by L. E. Bopst, state chemist. It was the first year in Maryland history that sales exceeded 300,000 tons.

Sales of mixed goods totaled 276,330 tons. Leading grade was 5-10-10, with 86,663 tons. It supplanted 3-12-6, which had been the best selling grade since 1944.

	Tonnage		
	Jan. 1-June 30	July 1-Dec. 31	Total
Total reported sales	232,351.70	78,880.98	311,232.68
Sales by out-of-state firms	20,254.04	7,030.28	27,284.32
Complete mixed goods reported	206,100.28	70,230.36	276,330.64
Superphosphate-potash mixtures	11,177.75	2,982.85	14,160.60
Nitrogen materials	5,611.16	1,676.38	7,287.54
Superphosphate	4,620.30	1,238.60	5,858.90
Potash salts	253.00	30.00	283.00
Nitrogen in mixed fertilizers	9,818.28	2,730.45	12,548.73
Phosphoric acid in mixed fertilizers	22,901.41	8,350.02	31,251.43
Potash in mixed fertilizers	20,361.49	6,269.61	27,131.10

Croplife®

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The rotational circulation of this issue is concentrated in the Northeastern states.

Safe Pesticide Use Urged

The next several months will see the year's heaviest use of insecticides, weed killers and fungicides on American farms. Not only is it a period of great use, but also one of potential hazard through possible misuse of these preparations on the part of growers.

Manufacturers of these products go to great lengths in setting up precautions of all kinds, including the publishing of medical bulletins on antidotes in some cases. The directions for use contain enough warnings, cautions and instructions to create respect for the material in the consciousness of even the most careless type of farmer.

Yet, unfortunate accidents still occur, through no fault of the makers. Thoughtless acts on the part of users cause most of the grief. Farmers just can't be warned too often about reading and heeding labels. But whose responsibility is it to give the user last-minute reminders about care in handling?

Probably the dealer is in the best position to do this. He should be alerted to the potential hazards involved in careless or improper use of the pesticides he sells. Most are already familiar with instructions, but it is easy, under the pressure of a busy season, just to sell these potent packages like one would a can of house paint or a pound of putty.

Examples of the type of accidents that can occur were pointed out by a California County Commissioner of Agriculture in a talk recently. The happenings he described were part of his report to emphasize the absolute necessity for a user's understanding what proper handling of pesticides means. Here are some of the incidents, as told by Edward K. Strobridge, Jr., Agricultural Commissioner of Alameda County, California:

"A worker spent six weeks in the hospital because he used no protective equipment while dusting strawberries with an injurious material. In this case, no one had told him that protective clothing and a respirator and gloves were necessary. In fact, there was no such equipment on the farm.

"An airplane operator turned over his plane when landing. The material used to dust the field spilled all over him. He walked away from the plane unhurt. If someone had turned the hose on him instead of giving him a glass of water to drink, he probably would be alive today.

"In several instances airplane dusters were found to be treating a field while workers were harvesting the crop.

"A worker treated himself with an insecticide to kill body lice. He killed the lice all right, but also killed himself. He knew that this material was being used to spray fruit trees to kill bugs. He could not read English and had not been informed that the material was toxic to human beings.

"A nurseryman was ill for several days after spraying in the greenhouse. He did not use a respirator because it was uncomfortable to wear. He is lucky to be alive and not wearing a coffin.

"Another individual mixed an arsenical herbicide in a wine bottle and stored it in his basement. During a family celebration he took his drink out of the wrong bottle and did not live to tell the tale."

Allen B. Lemmon, chief of the California Bureau of Chemistry, says that the bureau investigates each reported accident or injury where a pesticide is involved. It finds that most injuries are due to careless handling of pesticides and not following the directions given on the labels. "Apparently some people will not believe that the label means what it says when it warns against a particular exposure," he comments.

All users should be reminded to use pesticides strictly in accordance with the label cautions, warnings and directions. Also, to keep all materials away from children, irresponsible persons and domestic animals. And, as so well demonstrated in one of the instances above, always keep chemicals in their original properly-labeled containers. Never pour a poison into a wine jug, can or container other than the original.

Possibly this editorial will look like a safety sermon. Actually, it is. Everyone who sells and uses pesticides must keep constantly aware of their ability to harm people as well as bugs, if carelessness comes into the picture.

Firearms, butcher knives, razor blades and automobiles are all useful but dangerous. This fact doesn't reflect on them in any way. Nor does it in the case of pesticides, millions of pounds of which are necessary to control the many pests attacking our food supply.

No matter to what ends a manufacturer may go to protect the ultimate user of his product, the entire effort is in vain if the man who opens the package and applies its contents to kill bugs, weeds or fungi, does so carelessly and harms himself or others. The last person to talk to this user is the dealer and that's where the final instructions should be given.

Thus, a sort of moral responsibility rests upon the dealer to make sure that he and all of his pesticide-selling clerks know the story about each product. The farmer should be given every instruction right in the store, and the clerk should be sure the buyer "perceives before he leaves."

Long-Term Research Needed

The House Agricultural Appropriations Subcommittee was requested recently to use the same approach in developing a sound program of research and education for agriculture that has been given to long range plans for new highways, schools and housing.

This petition was made by Wm. Rhea Blake, executive vice president of the National Cotton Council who urged a program for the orderly expansion of agricultural research and education to "something approaching an adequate basis."

Mr. Blake expressed the hope that the subcommittee would approve as a minimum program, the full amount requested in the USDA budget for these functions.

Although the speaker represented the viewpoint of the cotton industry, his plea strikes a note in tune with the thinking of many in and around the agricultural scene. His premise is one that could be shifted from the growers of cotton to those who produce corn, wheat, livestock or any of the other important crops.

Cotton, Mr. Blake maintained before the subcommittee, must be competitive from the standpoint of quality, price and promotion if it expects to retain and expand its present markets. "The quality factor can be met only through research," he declared and added that so far as price is concerned, "the only satisfactory answer that we know for the long run is to reduce the cost of production through research. Any other answer is simply going to reduce the farmer's net income."

It seems to us that such an appeal makes sense. Stepped up research will have to be the answer to many of our agricultural problems—and we can think of worse ways to spend the money required.

CROPLIFE is a controlled circulation journal mailed to those responsible for the production and distribution of fertilizer and other farm chemicals and to retail dealers of the agricultural chemical industry in the U.S. To those not on the controlled list, CROPLIFE is available at $5 for one year, $9 for two years ($8 a year outside the U.S. and possessions). Single copy price, 25¢.

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MEETING MEMOS

April 19—Minnesota Ground Sprayers Assn., Organizational Meeting, Conference Room of Coffey Hall, University of Minnesota Farm School, Jim March, Cambridge, Minn., Secretary.

Apr. 26 — Third Annual California Fertilizer Conference, sponsored by the Soil Committee, California Fertilizer Assn., University of California, College of Agriculture, Davis, Cal., Sidney H. Bierly, Executive Secretary, CFA, 475 Huntington Drive, San Marino, Cal.

May 15-17 — Chemical Specialties Manufacturers Assn., Drake Hotel, Chicago, H. W. Hamilton, 50 E. 41st St., New York 17, N.Y., executive secretary.

May 19—Fertilizer Section, 25th Annual North Carolina Safety Conference, Robert E. Lee Hotel, Winston Salem, N.C.; William C. Creel, Safety Director, Department of Labor, State of North Carolina, Raleigh, Chairman.

June 2 — South Carolina Fertilizer Meeting, Sandhill Experiment Station, near Columbia, S.C.

June 3—Fertilizer Section, Virginia State Safety Association, Jefferson Hotel, Richmond, Va.; William C. Richardson Southern States Cooperative, Richmond, Chairman.

June 11—Executive Committee, Fertilizer Section, National Safety Council, Roanoke, Va. Thos. J. Clarke, GLF Exchange, Ithaca, N.Y., chairman.

June 12-15—Joint meeting, American Plant Food Council, Inc. and National Fertilizer Association, Greenbrier Hotel, White Sulphur Springs, W.Va. Paul T. Truitt, American Plant Food Council, 910 17th St. N.W., Washington, D.C., in charge of registration.

June 21—Western Agricultural Chemicals Assn., Spring Meeting, Clark Hotel, Los Angeles, C. O. Barnard, 2466 Kenwood Ave., San Jose 28, Cal., Secretary.

June 22—Pacific Slope Branch, Entomological Society of America, Mission Inn, Riverside, Cal.

June 28-30 — Sixth Annual Pacific Northwest Plant Food Assn. Regional Fertilizer Conference, Boise Hotel, Boise, Idaho, Leon S. Jackson, 702 Lewis Bldg., Portland, Ore., secretary.

Aug. 8-10—North Central Division, American Phytopathological Society, Wooster, Ohio.

Aug. 9-11—Ohio Pesticide Institute meeting and field tour, Wooster, Ohio. Dr. J. D. Wilson, Ohio Agricultural Experiment Station, Wooster, Secretary.

Aug. 10—Kentucky Fertilizer Conference; Guignol Theatre, University of Kentucky, Lexington.

Aug. 15-20—Farm & Home Mechanization Pageant, Michigan State College, East Lansing, Mich.

Aug. 15-19 — American Society of Agronomy and Soil Science Society of America, University of California, Davis Campus.

Sept. 7-9 — National Agricultural Chemicals Assn., Spring Lake, NJ.; Lea S. Hitchner, NAC Executive Secretary, 1145 19th St. N.W., Washington 6, D.C.

Sept. 7-9 — Ninth Annual Beltwide Cotton Mechanization Conference, Texas A&M College, National Cotton Council of America, Box 18, Memphis 1, Tenn.

Oct. 17-18 — Fertilizer Section, National Safety Congress, LaSalle Hotel, Chicago, Thomas J. Clarke, Chairman.

Nov. 2-3 — Annual Convention, Pacific Northwest Plant Food Assn., Pilot Butte Inn, Bend Ore., Leon S. Jackson, 702 Lewis Bldg., Portland, Ore., Secretary.

Nov. 7-8—California Fertilizer Assn., Thirty Second Annual Convention, Hotel Mark Hopkins, San Francisco, Sidney H. Bierly, Executive Secretary & Manager, 475 Huntington Drive, San Marino, Cal.

Nov. 29-Dec. 2—Entomological Society of America, Netherlands Plaza Hotel, Cincinnati.

Dec. 5-7—Agricultural Ammonia Institute, Kansas City; Jack F. Criswell, Executive Vice President, Claridge Hotel, Memphis, Tenn.

1956

Feb. 15-17—Western Weed Control Conference, Sacramento and Davis, Cal., W. C. Robacker, U.S. Department of Agriculture, Nevada Agricultural Experiment Station, Reno, Nev., Secretary-Treasurer.

Feb. 15-17—California Weed Control Conference, Sacramento and Davis, Cal., Oliver A. Leonard, Botany Dept., University of California, Davis, Cal., Secretary.

Committee Urges Stronger Cotton Research Program

WASHINGTON — Recommendations to strengthen the Department of Agriculture's cotton research program were made by the Cotton and Cottonseed Research and Marketing Advisory Committee at its meeting here March 14 to 16.

Among the committee's principal recommendations for production research are:

Expand (1) research on pink bollworm and other cotton insects; (2) research in developing, altering, and adapting equipment for the destruction of pink bollworms in seed cotton, cottonseed and gin waste at cotton gins; and (3) research on both mechanical and chemical weed control.

Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

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All Want Ads cash with order.

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WANTED — COMPETENT FERTILIZER factory superintendent for new dry mixing and granulation plant. Location—South Dakota. Applicant must have clean record. In replying give complete information as to age, experience, references, salary and so forth. Address 652, Croplife, Minneapolis 1, Minn.

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ARIZONA CROP PLANS

PHOENIX — Corn and sorghum may take up most of the 19% reduced cotton acreage in Arizona this year. This was indicated by Arizona farmers, according to Theo Ellis, extension economist at the University of Arizona. If farmers carry out their March 1 intentions, 1955 sorghum acreage would increase 35% above last year. This amounts to a total of about 240,000 acres for 1955 plantings. Corn acreage would increase about 16% over 1954 plantings.

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Editorial Excellence . . .

Croplife is proud of the seasoned and experienced staff of business journalists assembled to plan and direct the publication of each issue of this weekly *news*paper for the agricultural chemical industry.

EDITOR

LAWRENCE A. LONG, top editorial name in the farm chemical industry, is editor of Croplife with 20 years of editorial achievement behind him. He has had seven years of experience as editor of a monthly magazine in the agricultural chemical industry. With a combination of insight into and an understanding of the farm chemical industry and an extensive background of news work, Mr. Long oversees Croplife's widespread reporting job which brings news to the industry while it is still news. His familiarity with the industry also is invaluable in the guiding of Croplife's service program.

Lawrence A. Long

Donald Neth

MANAGING EDITOR

DONALD NETH, managing editor of Croplife, had five years of newspaper experience in the agricultural community before joining the staff of Miller Publishing Co. He has intimate first-hand knowledge of the growing importance of the use of fertilizers and agricultural chemicals in the management of efficient farming operations. For more than a year and a half he was in charge of the extensive research on the agricultural chemical industry undertaken by Croplife in preparation for its launching and he now is responsible for the day-to-day editorial operations of the weekly newspaper.

PLUS FULL-TIME STAFF — Backing up these specialized editors is a staff of newsmen working in Washington, New York, Chicago, Kansas City and Minneapolis, supplemented by 100 correspondents in other key cities. Industry news is gathered, sifted and reported with accuracy bred of an 80-year publishing tradition in the business journal field. A modern network of teletype communication links all Croplife offices permitting last-minute news deadlines. Croplife's own complete mechanical and printing plant completes the broad facilities necessary in the production of the weekly industry *news*paper.

FOREIGN NEWS — George E. Swarbreck, Croplife foreign manager, is alert to overseas news developments of interest to the agricultural chemical industry and supervises this news coverage in addition to writing a weekly column, "World Report."

WASHINGTON NEWS — Through weekly coverage of the nation's capital, Croplife keeps its readers up to date on events in this vital news center. Croplife's Washington correspondent is John Cipperly, a veteran capital newsman who interprets the Washington scene in terms of its short and long range impact on the industry. In looking behind the government news releases and the surface actions of agencies, Croplife reports on trends and significant behind-the-scenes activities.

RETAIL DEALER FEATURES — One of Croplife's principal editorial functions is to gather, sift and publish news and feature articles designed to make better merchants out of retail dealers of farm chemicals. Under the direction of Emmet J. Hoffman, merchandising editor, material specifically slanted toward the dealer is prepared by a staff that knows the dealer's language. Croplife is the first business paper to give this specialized editorial attention to retail dealers of agricultural chemicals.

The point of all this, to an advertiser, is that Croplife offers a unique, timely advertising medium to reach the agricultural chemical industry. A seasoned staff of full-time experienced business journalists, plus the complete facilities of a modern publishing company, insures the production of a top-quality publication devoted to service to the industry *weekly*.

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